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Entered as second class mail matter at the Postoffice at Medina, O. Published monthly.

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The A. I. Root Company, Publishers, Medina, Ohio

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See Page 739

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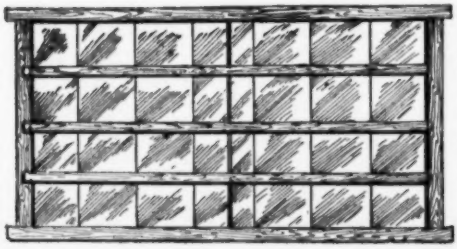

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$2.25

Each in lots of 5 K. D.

Prices F. O. B. Medina, Ohio.

The A. I. Root Company, Box B, Medina, Ohio

Honey Prospects and Markets

U. S. Government Report of November 15 Summarized.
(Information from Producing Areas for First Half of November.)

CALIFORNIA POINTS: Southern California —Occasional rain has fallen in some parts of southern California and the weather has often been cloudy. No frost has been reported but it has been cold on several occasions. A few colonies have brought in pollen and a little nectar, but generally bees are inactive. Most colonies are in fair condition; few reported light in stores. Trading in wholesale channels is quiet with hardly any export inquiry reported and no improvement in demand from eastern markets. Some beekeepers report a good local demand but generally even retail sales are said to be sluggish. Alfalfa honey is mostly cleaned up in the Imperial Valley. Moderate supplies of buckwheat-sage honey are being held by producers, including some old crop honey. As supplies lessen, beekeepers are showing more disposition to hold. Sales by beekeepers reported as follows, per lb.: light amber buckwheat-sage, occasional lot, 4-4¼c; orange, very few sales, extra white, 6¼c, few sales at retail high as 10c; white, 5⅞c, small lots up to 7c; small pails, extra white orange, 12c; extra light amber orange and sage, 9½c; Imperial Valley alfalfa, light amber to extra light amber, 3½c. Beeswax is dull and inactive at 10-12c per lb. cash; 12-14c per lb. in trade.

INTERMOUNTAIN REGION—The outstanding feature of the reports from all parts of the intermountain section this time is the light supply of honey remaining unsold. Apparently no section expects much of any carry-over into the new crop, and in many areas the small crop is already becoming cleaned up so far as large lots are concerned. Local demand has improved, although somewhat restricted by the warm weather, and some beekeepers are already buying from other areas to keep their customers supplied. One car white sweet clover and alfalfa reported sold at 5c per lb; 1 car, 6c; large lots white to water white, 5-5½c; few lower and occasional sales up to 7c; 60s, 6-8c; small pails, 7½-9c; few, 10c; light amber, one car, 4½c; one car, 6c; some small lots low as 4c; small pails, 6½c. White sweet clover and alfalfa comb reported moving at the wide range of $2.50-3.50 per case for No. 1 and fancy, few, $3.75; No. 2, $3.00-3.25; 1½ cars reported sold at $3.25 per case for No. 1; $3.00 for No. 2; some light weight unwrapped comb, $2.10 per case. White bulk comb, 8c per lb. Beeswax, 16c per lb.

PLAINS AREA: Red River Valley of North Dakota and Minnesota—Beekeepers have finished packing colonies which are to be wintered outdoors, and many colonies which are to be placed in cellars are now being moved in as following a period of warm summer-like weather it has become colder and cloudy. Recent rains have helped the condition of honey plants. Prices reported slightly better with an improved demand. Sales reported of white sweet clover, ton lots, 6½c; 60s up to 10c; small pails, 11c per lb. White sweet clover comb, $3.50; few $4.50 per case. South Dakota—Light frosts early in the month cut short activities of bees in bringing in nectar and pollen and brood-rearing, which was quite active in some sections. Some hives reported with 6 full frames of sealed brood. Beekeepers are making an effort to sell as much honey locally as possible. Ton lot sales white extracted reported at 6c per lb. Iowa—Colder weather has followed a very unseasonably warm period, during which time the bees flew frequently and worked on dandelion. The mild weather, with plenty of rain, has placed honey plants in good condition for next year. Colonies are in normal condition for winter though they have lost weight during the fall. Sales reported of extracted white sweet clover ton lots, 6c; few 60s higher; small pails, 10c per lb; chunk comb, 7½c per lb.; No. 1 section comb, $3.00; fancy, $3.20-3.25 per case.

SUMMARY.—The weather has continued abnormally mild during this period, though at the close it was cooler in the intermountain area. Rainfall has been heavy in the Northwest, and rainfall has been sufficiently adequate in the north central and northeastern states to advance next year's honey plants materially. Winter stores have in some cases been so depleted as a result of the warm weather so that feeding will be necessary, especially where the late flow was light. Bees are generally strong in numbers as brood-rearing was carried on late.

Very few sections report an active demand for honey, especially in large lots, and export demand has been negligible. However, there has apparently been steady selling of honey in small lots, and especially in small containers, to nearby stores and direct to consumers, because supplies are steadily growing less. Beekeepers rarely seem disturbed about not disposing of their crop before the next season comes on. Of course the crop has been exceptionally short, especially in the carlot producing sections of the mountain area and the north central states. Prices for large lots of honey seem to be generally steady, though many sales have been made at lower than average prices. Many beekeepers are reported discouraged at the present market level and present prospects. Honey prices, however, have not sagged as much proportionately as have prices of numerous other agricultural commodities.

What are the best sales arguments for Honey in December and January? Send 25c for list of Honey Sales Methods and a sample copy of the Honey Calendar.

JOHN F. HAWKINS
P. O. Box 203. Chester, Pa.

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Monthly Report of Honey Producers

Early in November we sent the following questions to honey producers: 1. What per cent of the honey produced in your locality has already left the hands of the producers? Give answer in per cent. 2. At what price has honey been sold, or contracted for, if any, in large lots (carload or less) in your locality during the past month for (a) extracted honey, per lb.? (b) comb honey, fancy and No. 1, per case? 3. What are prices when sold to grocers in case lots of (a) extracted honey in 5-lb. pails? (b) comb honey, fancy and No. 1, per case? What is the retail price to consumers in your locality of (a) extracted honey in 5-lb. pails or other retail packages in terms of 5-lb. pails? (b) comb honey, fancy and No. 1, per section. 5. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair or rapid. 6. What is the condition of the colonies for winter in your locality compared with normal, considering the number and age of the bees and supply of stores? Give answer in per cent. 7. How does the number of colonies to be wintered in your locality compare with that of last year? Give answer in per cent. The answers received are tabulated as follows:

State. Name.	Pct. sold.	Carload lots. Ex.	Carload lots. Comb.	To grocers. Ex.	To grocers. Comb.	Retail Ex.	Retail Comb.	Movement.	Cond. colo. wint.	No. colo. wint.
Ala. (J. M. Cutts)	40			.50	$4.30	$.65	$.20	Fair	100	100
Ark. (J. Johnson)				.75	3.60	1.00	.20	Slow	80	100
B. C. (A. W. Finlay)	65	.10		.75		.90		Fair	100	100
Calif. (L. L. Andrews)	50					.82½	.17	Slow	50	95
Colo. (O. E. Adcock)	90	.05	3.00	.48	3.60	.55	.20	Slow	90	80
Colo. (J. A. Green)	25	.04½		.55	2.50	.65	.15	Slow	100	90
Conn. (A. W. Yates)	50	.06	3.25	.70	4.50	1.00	.30	Fair	100	110
Fla. (C. C. Cook)		.05		.45		.59		Slow	100	100
Fla. (H. Hewitt)	60			.50		.65		Slow	90	110
Ga. (J. J. Wilder)	25	.06		.50		.75		Slow	80	100
Ill. (A. L. Kildow)		.05		.50	3.00		.15	Slow	110	95
Ind. (Jay Smith)	25			.60	2.50	.75	.15	Fair	125	100
Ind. (T. C. Johnson)	30			.65	3.60	.80	.20	Slow	100	100
Ind. (E. S. Miller)	25			.65	3.80	.80	.20	Slow	100	90
Iowa. (W. S. Pangburn)	90			.47½		.57½	.19	Fair	90	85
Iowa. (E. G. Brown)	80	.05		.60	3.50	.75	.20	Fair	100	90
Iowa. (F. Coverdale)				.45	4.00	.50				
La. (E. C. Davis)	60	.05		.50		.65		Fair	100	100
Me. (O. B. Griffin)	50				6.00		.32	Slow	90	85
Md. (S. G. Crocker)	25			1.00	5.50	1.25	.30	Slow	90	100
Mich. (I. D. Bartlett)	75			.50		.60	.25	Fair	100	90
Mich. (L. S. Griggs)	25	.06½		.45	3.00	.55	.20	Fair	80	85
Mich. (Floyd Markham)		.07½	3.60	.60		.75	.20	Slow	85	
Mich. (E. D. Townsend)		.07½						Slow	100	100
Minn. (B. L. Morehouse)	15	.06½	3.50	.52½	3.80	.65	.17	Fair	85	90
Minn. (F. W. Ray)	20	.06		.50		.65		Fair	100	100
Mo. (J. M. Romberger)						.60	.15	Slow		
Nebr. (J. H. Wagner)	35	.05½		.50	3.50	.60	.20	Slow	80	90
Nev. (Geo. G. Schweis)		.04	3.20	.55	3.50	.75	.25	Fair	100	90
N. J. (E. G. Carr)							.35	Fair	100	100
N. Y. (Adams & Myers)				.60	4.00	.85	.25	Fair	110	100
N. Y. (Geo. B. Howe)		.06½	3.25	.47½	3.50	.75	.20	Fair	100	100
N. Y. (F. W. Lesser)		.06	3.00	.48	4.00	.60	.25	Fair	100	100
N. Y. (N. L. Stevens)	70	.06		.45		.60		Fair	100	100
N. C. (C. S. Baumgarner)	100			.75		1.00	.25	Fair	100	100
N. C. (C. L. Sams)	30	.07		.65	3.25	.80	.25	Slow	95	100
N. D. (Chas. Engle)	80	.06½		.40	3.60	.50	.20	Fair	96	110
Ohio. (F. Leininger)	50	.06½	4.00						100	
Ohio. (J. F. Moore)	20			.50		.75	.20	Slow	100	110
Ore. (H. A. Scullen)	50	.06½		.43		.52½		Slow	100	80
Pa. (Harry Beaver)	80	.05		.55	3.25	.65	.18	Fair	90	95
Pa. (D. C. Gilham)	25			.80	5.00	1.10	.30	Fair	100	100
S. C. (E. S. Prevost)	100					.87½		Slow	80	80
S. D. (L. A. Syverud)	50	.05		.45	3.00	.60	.20	Fair	100	100
Tenn. (J. M. Buchanan)	90					1.00	.25	Slow	90	100
Texas. (T. A. Bowden)	80			.55		.70		Slow	50	95
Texas (J. N. Mayes)	75	.04	4.20	.27½	4.50	.50		Slow	100	90
Texas. (H. B. Parks)	20	.04		.45		.65		Fair	90	100
Utah. (M. A. Gill)	80			.45	3.25	.50	.20	Fair	85	90
Vt. (Phillip Crane)	75		3.37½	.90	4.63	1.15	.30	Fair	100	105
Wash. (W. L. Cox)	50							Fair	80	100
Wash. (G. W. B. Saxton)	60	.05		.42		.45		Fair	100	82
W. Va. (W. C. Griffith)	25					.75	.26	Slow	90	110
Wis. (Jas. Gwin)	30	.07		.50		.67		Fair	100	75
Wyo. (E. C. Reed)	40	.05½		.40	3.60	.50	.20	Fair	90	80

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Gleanings in Bee Culture

December, 1931

Our Cornerstone

REMEMBER at all times that improved bee culture is our end and aim, and we trust no one will hesitate to give any facts from experience because they may tend to overthrow any particular person or "hobby." If any of our special plans don't work, or if anything we advertise has had its value overestimated, here in these pages is the place of all others to set the error right.—From A. I. Root's "Introduction" in the first issue of Gleanings in Bee Culture, Jan. 1, 1873.

Census Figures on Bees and Honey The statistics on bees and honey from the 1930 census thus far released indicate that the census enumerators again failed to list a large percentage of the colonies. In seven of the eighteen states for which figures have been released, the number of colonies is greater in the 1930 census than in 1920, while in eleven the number is less. In two states, Montana and North Dakota, the number of beekeepers listed in 1930 was greater than in 1920, but in all the others thus far released the number is less.

Fermentation in Honey In the November issue of Wisconsin Beekeeping, Prof. H. F. Wilson and Geo. E. Marvin give results of their experiments on the influence of temperature on fermentation in honey. By placing samples of honey in different temperature chambers in which the temperature was controlled, then examining some of them after one year and others after two years, they were able to determine the range of temperature which caused the greatest amount of fermentation. Their results indicate that fermentation is most rapid at temperatures between 55° and 65° F. Honey stored where the temperature is 50° F. or less, does not ferment, and fermentation is retarded by temperatures above 65° F. according to their data. They recommend that extracted honey be stored in the attic of the honey house or dwelling where the summer temperature is usually above and the winter temperature below the range most favorable to fermentation. It should not be stored in a basement, since the temperature there is often within the range most favorable to fermentation for long periods of time. There has been considerable trouble from fermentation in comb honey this season in the clover belt, so it is reasonable to expect fermentation in extracted honey in this region in honey that is held in storage during the winter and spring unless stored where the temperature is 50° or below.

Honey in Automobile Radiators Many inquiries are still being received regarding the use of honey in making an anti-freeze solution for automobile radiators. While honey is being used successfully by some for this purpose, many have experienced trouble in using a mixture made of honey and water alone. During very cold weather, a honey-water solution that is sufficiently strong to prevent freezing, does not circulate well when first starting. By using equal parts by volume of honey, alcohol, and water, a satisfactory solution can be made. The honey serves to prevent to a large extent the evaporation of the alcohol so that for ordinary driving, it should not be necessary to add more alcohol during the winter.

Slow Market for Comb Honey Not for many years has comb honey moved as slowly during late summer and fall as it did this year. The unusual abundance of fruit was no doubt a large factor in this slow movement. The idea that comb honey is a luxury was, of course, another. In addition to this, many of the eastern states had a good crop this season, and in this territory there are many small comb-honey producers whose aggregate production must be enormous. This eastern comb honey, which was sold locally, was, of course, sold early. Now that the most of these small lots have been cleaned up and the fresh fruit season is past, comb honey is beginning to move in a more nearly normal manner, al-

though at lower prices than last year. Since the honey crop was short in many comb-honey-producing localities in the West, the prospects are that, in spite of the difficulties, the 1931 crop of comb honey may be cleaned up earlier than usual.

National Honey Week Greater and better-organized effort was put forth in the promotion of honey during National Honey Week, November 9 to 14, than at any time since National Honey Week was started several years ago. While it is impossible to measure the effects of this effort, the evidence at hand thus far indicates that it was certainly well worth while. The greater success of National Honey Week this year was due largely to the work of Miss Fischer of the American Honey Institute in organizing and co-ordinating the plans well in advance. Thus she was able to secure excellent co-operation from several of the largest food concerns such as General Mills and the Kellogg Company, both of which concerns made special mention of honey in connection with their own advertising during the week. There was also a good rsponse by domestic science workers in the various states, as well as by beekeepers' societies and individual beekeepers throughout the country.

The Kellogg Company supplied all of its salesmen with large window display cards calling attention to National Honey Week. These were placed in all Kellogg window-displays, especially where the grocer carried honey in stock and was willing to place some of it in a window with packages of Kellogg products.

In this connection an official of the Kellogg Company writes that that organization has been able to mention the use of honey with cereals nearly 6,000,000,000 times in their advertising during the past year. He also states that they have received more than 5000 letters from beekeepers during the year asking for their honey pamphlets, jar stickers, honey recipes, and other honey promotion literature which the Kellogg Company supplies free of charge to beekeepers who will use them.

Convention Season Owing to unfavorable economic conditions, there has been considerable misgiving among the leaders of beekeepers' societies in regard to the attendance at meetings this winter, and it is reported that in at least one state the annual meeting will not be held this year for this reason. However, some of the early meetings have been fairly well attended and the enthusiasm manifested has been somewhat surprising. The explanation for this is not difficult to find. While many beekeepers are discouraged with the low prices and in some cases short crops, they realize that they are far better off than most of their neighbors engaged in other occupations. The decline in honey prices has been less in proportion than that in most farm products. In numerous cases where beekeeping on a moderate scale has been carried on in connection with general farming, it was the bees that enabled the farmers to pay their taxes this year. Thousands of smaller beekeepers in the East who sell their honey locally have not found it necessary to reduce their prices to any great extent, while they are able to purchase much more with their dollars than they could a few years ago. Western beekeepers, who depend entirely upon honey production for their living, and who have but a limited field for local selling, have suffered most especially since the crop was short this year in many extensive western producing regions. Another factor that undoubtedly is reflected in attendance at beekeepers' meetings is that the need of inspiration, information, and betterment of the industry through co-operation with fellow beekeepers is greater during hard times than during times of great prosperity. In these days of automobiles and good roads, beekeepers can ill afford to miss attending any beekeepers' convention held within reasonable distance. Many beekeepers apparently fully realize this.

Sweet Clover and Alfalfa Rejuvenate Abandoned Farms Studies of the effects of legumes in relation to economical crop production by the New York State Agricultural Experiment Station, recently described in Bulletin No. 596, published by the Station, throws new light on the great value of sweet clover, alfalfa, and other legumes for building up soil fertility. This was especially apparent in the case of the unproductive type of soil found in portions of southern New York where there are many abandoned farms. The bulletin states that the effect of these legumes

upon this type of soil was so marked that the increase in nitrogen alone due to the legumes does not seem to account for it entirely. Beneficial effects on soil tilth, aeration, and biological and chemical changes brought about by the legumes changed this unproductive type of soil into one of high productivity. Apparently when the extensive areas of unproductive soil now practically abandoned are to be brought back under cultivation or into pasture land, sweet clover will be at least one of the outstanding means of rejuvenating the soil. Fortunately, farmers in the great wheat region of the Northwest discovered the value of sweet clover for this purpose before their soil became unproductive. Since the growing of legumes, most of which are honey plants, becomes more and more imperative as crop after crop is taken from the soil, the indications are that many regions which are now poor locations for honey production, may become good beekeeping locations in the near future. In this connection, it is interesting to note that the California Agricultural Extension Service Circular 57 issued in October this year, mentions Hubam clover first in the list of winter-growing legumes recommended as green manure crops for California.

Effects of Mild Autumn Many have expressed concern as to the possible effects upon the bees of the mild weather during the fall. It is certainly unusual to see bees working on dandelion, alsike clover, and sweet clover late in November in the North as they did this season. Some thought that the bees would again start rearing brood from the stimulus of a little incoming nectar and pollen. However, the bees have been remarkably quiet since they ceased rearing brood when the mildness of the weather is taken into consideration. Even when many bees were flying, it was interesting to note on opening the hive that it was only comparatively few that were active, the vast majority standing quietly on the combs and moving sluggishly when disturbed.

It is an inspiring sight to see the bees of strong colonies scattered throughout the hive, even in remote corners, when they are in this quiescent condition. These bees have not been deceived by the mildness of the weather. They act as if they know perfectly well that winter is coming, although there are now no bees in the hive except possibly the queen that have ever experienced winter. If these bees could remain as quiet throughout the winter as they now are, they would come through almost as young, so far as vitality is concerned, as they now are. They would wake up in the spring, as if after a night's rest, capable of doing nearly as much work as though they had been born at that time. While they certainly can not realize that the existence of the colony depends upon their ability to prolong their lives to four or five times the normal span in order that the colony may bridge the gap of winter, they certainly act as if they were fully aware of their responsibility in this respect. To live long, they must live slowly, and to winter well in the North, they must live long. They religiously take up their job of winter quiescence and refuse to be disturbed by the mild autumn. The instinct to conserve their energy dominates at this season.

In the North, the extreme quiescence of November and December will soon be disturbed to some extent by one or both of two factors, which compel them to expend precious energy. These factors are the necessity of generating heat by muscular activity during cold weather and the activity often resulting from the retention of feces if the food is poor and the confinement long. Fortunate is the colony which is so strong or so well protected that it need not generate much heat to keep warm during the winter, especially if its food contains the minimum of indigestible matter. Unfortunate is the colony which is so small or so poorly protected that it must become quite active during cold weather, especially so if its food is not of the best.

In the South where bees fly freely every few days, the winter activity is often much greater than in the North, often causing them to age so rapidly that brood-rearing must be started in mid-winter in order to keep up the population of the colony.

It is doubtful if the mild fall has resulted in any brood rearing out of season in the North, and the late cleansing flights have certainly been beneficial. The bees have been so quiet even when the weather was suitable for flying freely, that the additional consumption of stores has been slight in most cases. In general, the mild fall has been beneficial rather than detrimental to the colonies in most northern regions.

The Huber Centenary

Dr. E. F. Phillips

Beekeepers Throughout the World Pause in Memory of this Great Student of Honeybees

One hundred years ago this month, the great Swiss naturalist and authority on honeybees, Francois Huber, ended his labors at the ripe age of eighty-one years. It is fitting that on this anniversary we pause in our hurried labors to acknowledge the debt which all beekeepers owe to Huber, and to compare his lot with our own.

The work of Huber marks the beginning of modern knowledge of the activities of bees. Prior to his day, some good work had been done by Reaumur and others in unfolding some of the mysteries of the hive, but it remained for Huber to verify the correct observations, to correct those not properly recorded and to build a sound foundation of observation on which our present knowledge of bees and the present beekeeping industry securely rest. An intimate knowledge of bee activities must form the basis for practical beekeeping, and it was in the building of this foundation that Huber was supreme in his day.

Influence of Early Environment

Huber was born in Geneva, July 2, 1750. He came of a family with much interest in natural sciences, for his father was eminent in such work. Later his son Pierre carried on the torch lighted by his forebears and wrote a classic work on ants. Francois Huber's early devotion to a study of living things is reported to have injured his health and it is possible that his early intense work on bees so injured his eyes as later to bring on total blindness. Huber was fortunate in his early reading, for his favorite author was the masterly French naturalist Reaumur. He was fortunate likewise in his friends, for he was an intimate of Charles Bonnet, to whom he addressed the communications which constitute the first volume of his final work. Later he found still another close friend in the physiologist Senebier. Bonnet was a neighbor, living in the nearby town of Genthod.

Overcoming Handicap of Blindness

When blindness overtook Huber, he employed a young man named Burnens of Canton Vaud as a reader, and this selection turned to a piece of rare good fortune. Burnens appears to have been a man of scant education, but his constant association with Huber, the reading which he did for his employer and his own native skill combined to fire his enthusiasm. When after complete blindness came to him, Huber again took up his work with bees, Burnens acted as his eyes and carried out detailed experiments which gave results of lasting value. It is doubtful whether Burnens could have planned or carried out such work by himself, but under the skilled guidance of his master, his vision was stimulated to see things of importance and he left behind him a worthy monument to his acute vision and his untiring devotion to Huber and to bees.

Portrait of Francois Huber from Jardin's Natural History of Bees (1840).

Before his blindness was complete, Huber met Mlle. Maria Aimée Lullin, daughter of a Swiss magistrate. Her parents protested vigorously when their daughter made known her desire to marry young Huber, whose final total blindness was already certain, but she finally overruled their protests. She literally acted as eyes for the blind, was often his reader, always his secretary and was his constant helpmate until her death. In his old age, Huber said that so long as his wife lived, he was not sensible of the misfortune of

blindness. Finally, when the help of his servant Burnens was no longer possible, and when his devoted wife had died, his son Pierre became his helper, and more than that, his co-operator. It is interesting to note that in Huber's writings he often used the words, "I saw," when referring to the observations recorded. Evidently the things which his helpers saw under his guidance and reported to him became visually real.

English Translation by Dadant

Huber's first published work appeared in 1792, being written in the form of letters to his trusted friend Bonnet. A second volume was added and the completed work appeared in two volumes in 1814, the second volume being in the form of monographs written with the aid of his son. An English translation of the first volume appeared in 1806 and was reprinted in 1808. Another English translation appeared in 1821 and still another in 1841. Some years ago in re-reading the complete French work and the English translations, Mr. C. P. Dadant was struck with the total inadequacy of the English translations, and in 1926 gave us the first complete English translation of this noted work. Beekeepers of all English-speaking countries owe a debt of gratitude to Mr. Dadant for this noteworthy service.

It was my good fortune to discuss these translations and the original work with Mr. Dadant on several occasions. He called attention to several surprising and inexcusable errors in all the previous English translations, indicating that the several editions, each of which purported to be newly translated, were mere copies of the older work. Mr. Dadant also for the first time reproduced all the twelve plates of the complete work. I should like here to record my appreciation of the fact that in the preface to his translation Mr. Dadant gives me credit for suggesting the complete translation.

Aside from the information to be gained from a reading of the records of Huber's discoveries, one gets the most enlightenment regarding the man from a reading of his introductions. In the introduction to his first volume, he gives fulsome praise to Burnens for his help, relating his diligence in watching worker bees that were laying eggs hour after hour, in order to catch one in the act. Huber also relates his untiring energy in counting all the bees of a colony and in doing other trying pieces of work.

Period of Great Tribulation

After his first book appeared, troubles seemingly without end came to Huber. First, his trusty servant left him to return

Former home of Huber, Pregny, near Geneva, Switzerland.

to take up duties at his home, later becoming a magistrate. His old friend Bonnet died and discouragement took possession of him. In some degree Bonnet's place was taken by Senebier, but he also died shortly afterward and brought fresh sorrow to the afflicted naturalist. As a final blow, Huber's devoted wife died, leaving him a lonesome and apparently helpless man. But here his son Pierre stepped into the breach and not only acted as eyes for his father but added to the observations himself. The second volume of his work doubtless owes its very existence to the son's devotion and to his determination that his father's later work should not be lost.

In a brief note written by the son in the second volume, an explanation appears of a situation which has puzzled many who have read Huber's work realizing his affliction. How was it possible for him to understand such things as bodily structure of bees or comb architecture when he could not see them, entire or in dissections? This note explains that elaborate enlarged models were made for him, so that he could feel what he could not see.

Some years ago still another series of letters written by Huber were brought to light and have appeared in a French edition. These have unfortunately not yet become available for those who read only English, but it is to be hoped that some person with a devotion to beekeeping comparable to that of Mr. Dadant will translate them.

Huber's daughter, Madame de Molin, moved to Lausanne, and to her home Huber was taken as his life drew to a close. There he died on December 22, 1831. It is the centenary of his death that beekeepers this year celebrate.

Portrait Painted by Snodgrass

A word of explanation is needed regarding the two portraits of Huber here reproduced. It appears that the only authentic portrait of Huber was a miniature owned by his daughter. She permitted a copy of this to be made and the copy was used for the making of a copper plate which illustrates Jardine's Natural History of Bees (1840). An inferior copy from this copper plate has appeared in numerous books on beekeeping. A few years ago, Mr. R. E. Snodgrass, whose work on the anatomy and physiology of the honeybee is a classic, painted a portrait of Huber from a photographic enlargement of the Jardine copper plate. This was necessarily done at third hand, but it seemed highly desirable to have a portrait of Huber without the necessary etchings of a copper plate. That Mr. Snodgrass did a fine piece of work will surely be the opinion of all who see the reproduction here given for the first time. The original painting by Mr. Snodgrass is in the Bee Culture Laboratory at Somerset, Maryland.

Portrait of Huber from a painting by R. E. Snodgrass, after the Jardine copper plate shown on page 744.

Former Home Carefully Preserved

Having thus inadequately recorded the salient features of Huber's life, a personal narrative may be pardoned. In June, 1926, Mrs. Phillips and I visited Geneva. We had previously attended the meeting of the Société romande d'Apiculture at Sion where we made the acquaintance of some beekeepers residing in Geneva. When we went to Geneva at the close of the Sion meeting, our newly acquired friends did everything possible to make our visit to their city memorable, and among other things they took us to Huber's former home at Pregny. That was a visit never to be forgotten. The house now forms part of the large estate of the Baron Rothschild and is carefully preserved.

We entered the garden where Huber worked but did not go into the house, for it was occupied. While there we could not help wondering just where Huber's colo-

nies of bees had been located, where he sat as he directed the eyes of Burnens, of his wife, and later of his son, which was his favorite walk, how he spent his time in the garden when not at work with his beloved bees. Myriads of unanswerable questions forced themselves upon us. We allowed our imaginations to roam, but the important thing for all of us, Swiss and Americans alike, was to realize that we stood where a great master had lived and where he worked. There was inspiration merely in walking the ground where he had trod.

We, of course, took some photographs on that memorable visit, and these serve as souvenirs of a day of delightful remembrance. Two of the photographs then taken are here reproduced, one showing the house from the road and another within the garden wall. Unfortunately one photograph which shows the friends who were with us is not good enough for reproduction, and I should like to show these people, for it was evident that the Swiss beekeepers are deeply devoted to their great master and ours, and that they feel for him a personal gratitude and devotion which beekeepers of all lands may properly share.

In July of this year, the meeting of the French Swiss beekeepers' society was held as a memorial to Huber. Several representatives of the German Swiss Society and a delegation from the Société centrale of France, united in honoring the blind leader. In the presence of Huber's great grandchildren, the several societies unveiled a tablet placed on his former home to remind coming generations that a great man lived there. The dedication was by M. Mayor, president of the French Swiss society, and at the following meetings time was devoted to a discussion of Huber's life and work. In a similar manner at their annual meeting, the German Swiss society paid tribute to his memory.

The few great figures of beekeeping, like the outstanding leaders in other lines of human endeavor, can not be considered as the possessions of people of one land, but they are world figures. Recognizing the debt which beekeepers everywhere owe to the great master, Huber, in all parts of the world, bee enthusiasts are paying tribute to him on the hundredth anniversary of his death. American beekeepers join heartily with their co-workers of all lands in this tribute. Our admiration for him must in the last analysis rest on the accomplishments which are recorded in his works, but it is materially

Garden at the former home of Huber at Pregny, Switzerland. His bees must have been located here.

increased through a realization that he refused to give up a life of great activity because of his affliction. His dogged determination, his devotion to his life work and his high quality as an observer combine to make one of the best examples so far put before us for emulation.

May the memory of beekeepers for Huber live forever!

Ithaca, N. Y.

Future of Package-Bee Business

Robert B. McCain

More Reasonable Express Rates Should Greatly Increase Demand for Packages

If the efforts of the California State Beekeepers' Association to obtain lower express rates on package bees result in nothing more than the findings of the representatives of the Agricultural Department and the Bureau of Commerce, those efforts will not have been wasted. Although the inquiry was confined to the state of California, the analysis of the problem, as submitted by F. E. Todd and F. H. McElfresh, Jr., will be of interest and value to beekeepers everywhere.

The production and sale of package bees is a seasonal and sectional industry; and it is of comparatively recent development. The analysis of the problem of marketing package bees referred to above makes it clear that prior to 1913 there was no such business in existence. The growth and development of the business has been most marked during the past five years.

Problems of Production Already Satisfactorily Solved

Problems that arose in the early stages of the package bee business, such as proper containers, size of package and proper food in transit, were solved largely by the trial and error method; but they were satisfactorily solved. The problems that now confront the business are such as may reasonably be expected to develop in any rapidly growing business.

Prices at which package bees are now offered are very close to the cost of production; yet the cost of package bees to the buyer plus the cost of transportation charges is enough to set a definite limit to the development of the business. Buyers can not be expected to purchase package bees in ever-increasing quantities when the cost of delivery remains one and one-half times first class. Parcel post and truck delivery have been tried to some extent, but express delivery seems to have the preference. Practically the only objection to express delivery is the excessive cost.

Climatic conditions of northern California, with an early spring and abundant flow of nectar from early spring flowers, make it possible to produce bees in quantity for early shipment into these sections of the country not so favored. Eleven western states and three western provinces of Canada have, normally, good honey flows during early summer months; but the late arrival of spring prevents the building up of winter-weakened colonies in time to harvest a full crop of honey. These western states and provinces are the principal buyers of California package bees.

These same areas in the United States and Canada show a deficiency of bees, at the time of fruit bloom, to do the essential work of pollinating the flowers. There is a constantly increasing demand from orchardists for package bees to supply this need, but the cost of delivery hampers the development of the business in this direction.

Increases 300 Per Cent in Five Years

If the rapid growth of the package-bee business in California during the last five years is taken as a basis of judgment, the prospect for the future development of the business is very encouraging. During the year 1925, the number of packages shipped from California was 12,187; in 1930, 38,928. These figures show an increase of over 300 per cent in five years.

This rapid increase is due, no doubt, to a better understanding of the value of strengthening weak colonies early in the season by the addition of new bees and queens in order to obtain bumper crops of honey for the beekeeper and bumper crops of high-grade fruit for the fruit-grower. Along with this increase of information must go improvement in containers, improvement in food for the bees in transit and safety of transportation. Present day methods of shipping package bees leave little to be desired in efficiency. Loss in transit has been reduced to a minimum.

Present Express Rates Out of Line

The foregoing facts would seem to make it clear to anyone that in seeking an adjustment of the express rate on package bees to a more reasonable level, a special privilege is not being asked. All that is sought or expected is simple justice. When package bees are compared to other commodities that take the one and one-half times first class express rates, the incongruity of the classification is evident. Such live stock as elephants, camels, zebras, alligators, snakes, as well as the rhinoceros, the hippopotamus, the giraffe, and other zoological specimens, horses, cows, steers, calves, deer, elk, sheep, hogs, etc., are in the same classification as package bees.

It should be noted that such animals as those listed above require a great deal of care and attention in transit; and they take up a great deal of space. By contrast, bees in standard cages occupy comparatively little space, are cleanly in their habits, and the packages are light and easily handled. The cages are so constructed as to provide proper ventilation while being piled up to a height to fill a space that would accommodate a horse or a cow. Crated packages weigh about 35 pounds to the crate.

Since bees are kept for the purpose of producing honey, a food commodity, it seems only reasonable that they should be classified with live stock that take the first class express rate. Dairy cows, milk goats, chickens, rabbits, etc., take the first class rate. Of course, the express companies take into consideration value, weight and space requirements, value per pound, and many other important items, in making the classifications; but from no point of view can it be made to seem reasonable that the present classification of package bees is just and right.

Greatest Obstacle in Further Development

This survey of the field seems to indicate conclusively that the greatest obstacle to the further development of the package bee business is the excessive express rate. The estimated potential increase in shipments of package bees from California is placed at 400,000 packages per year.

Lompoc, Calif.

Sweet Clover to the Rescue

E. R. Root

How It Yields Pasturage for Bees and Cattle During Seasons of Drouth

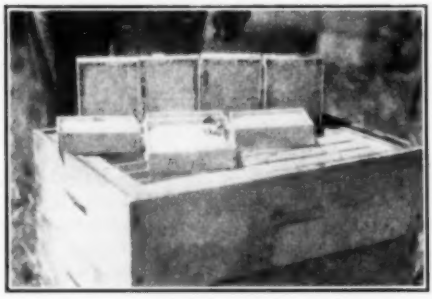
If a beekeeper could have a fair, average crop of honey every year, even though that average were not large, he would be quite content. In some localities this is possible; but more often there is a bumper crop one year followed by a couple of fair ones with a complete failure once in five years. This is the cycle all too often in California and in some parts of the East where there is only white clover for white honey.

Sweet Clover Dependable in Seasons of Drouth

There is one honey plant that is now

One of The A. I. Root Company's apiaries in a sweet-clover locality as it appeared during the 1931 honey flow.

overcoming this irregular cycle. I refer, of course, to sweet clover. Where the soil is not too acid, it is the most dependable source of honey in America today. Wet or dry, drouth or no drouth, it yields white honey every year when all other sources may fail. During a season of drouth such as we often have in most of the eastern localities when white and alsike clover are killed out, sweet clover, if present, fills the gap. When the soil is just right for moisture, there is, of course, nothing better than white clover or alsike clover.



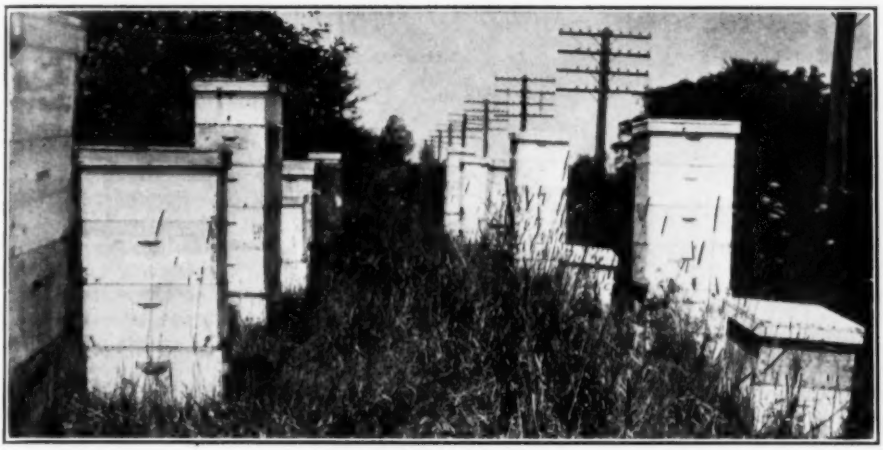
Well-filled sections indicate the strength of the honey flow from sweet clover in 1931.

When both white and sweet clover are present, one following the other, a bumper crop is recorded. Fortunate is the beekeeper who has these three sources with sufficient moisture.

For many parts of the country there has been a drouth during the past two seasons. Had it not been for sweet clover many beekeepers would have gone out of business or migrated to the great West or to the South. Here at Medina we had a severe drouth in 1930 with a little honey from fall sources, enough to supply all the colonies with a food-chamber of honey and a small surplus of amber honey. The two yards of bees that we had moved into northwestern Ohio last season had secured a good surplus of beautiful white sweet-clover honey in spite of the drouth. The moved bees did so well compared with those that were kept at home that we decided, at the beginning of this season, to move more of our yards into the northwestern part of the state. The result of this season's experiment is shown in the photographs here reproduced. The pictures speak for themselves. They show what the bees did in a dry season in the different yards where there was an abundance of continuous yielding sweet clover with nothing else.

Estimating forty pounds per super for the skyscrapers (although many had fifty pounds) one can figure on a conservative average of 175 pounds of honey for each and every colony in this locality where drouth had curtailed most of the farm crops and had killed out or stunted white and alsike clover. The bees at home scarcely did more than to fill their food-chambers and what they did get was from alsike, scattering sweet clover, and fall flowers. Our soil near Medina is more acid and consequently, the farmers are not using sweet clover as a dry season crop

This apiary run for comb honey was made up of package bees which were first rented to an orchardist, then moved to this sweet-clover location.



Although there were no other sources of nectar for surplus honey in this locality, sweet clover yielded a good crop of honey in this apiary.

as they are doing in northwestern Ohio. They would do well to put lime in the soil and sow sweet clover.

The Automobile and Migratory Beekeeping

Of course, it costs more to operate our bees 75 miles from home, but that cost is small in comparison with the difference in crops. In these days the automobile and the auto truck have almost eliminated distance. Where there is good sweet clover pasturage within 100 miles and the season is not promising at home, it certainly pays to move the bees.

The farmers in northwestern Ohio are not putting in sweet clover to help the beekeeper. Oh, no! They are doing it for themselves as experience has shown that sweet clover in a drouth affords excellent pasturage for cattle when all else fails; in addition it puts the soil in splendid condition for other farm crops when the seasons again furnish sufficient moisture. It is these two factors, drouth resistance and soil improvement, that are making the farmers in the drouth sections of the country turn to sweet clover, provided, of course, that the soil is not acid.

Strong colonies and a large acreage of sweet clover make a combination that results in such skyscrapers.

Hydrocyanic Acid in Fumigated Honey*

G. C. Spencer
Associate Chemist, Bureau of Chemistry and Soils

and

E. L. Sechrist
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Experiments to Determine if Killing Bees With Calcium Cyanide Injures Honey

Introduction

The earliest reference to the fumigation of beehives with hydrocyanic acid (prussic acid) as one step in the suppression of American foul brood is found in Gleanings in Bee Culture for October, 1926, pages 644-646, written by C. L. Corkins, who was then the State Entomologist of Wyoming. The poison gas was obtained, then as now, from the spontaneous decomposition of calcium cyanide in the air. In April, 1928, another article by the same author entitled, "The Use of Calcium Cyanide in the Apiary," appeared in Bulletin No. 158 of the Agricultural Experiment Station of the University of Wyoming.

Corkins records a variety of experiments in some of which as much as five ounces of calcium cyanide was used in a 3-frame hive, although two-thirds of an ounce was the quantity normally used for a hive of that capacity. Feeding tests on rabbits, with honey that had been exposed to this excessive quantity of hydrocyanic-acid gas (7.5 times the usual quantity) showed that the honey had not been rendered poisonous.

In 1923 Griffin and others published a bulletin on the "Absorption and Retention of Hydrocyanic Acid by Fumigated Food Products"[1] in which they refer to the action of hydrocyanic acid on four samples of honey (p. 14), two of which were capped and two uncapped. A trace of the poison gas was absorbed by the capped samples; the uncapped were reported as containing 2 and 9 parts per million of the gas respectively. The authors make the following comment on their findings: "The absorption of hydrocyanic acid by uncapped honey was unexpectedly low. This was also surprising, in view of the fact that moist foods have a tendency to absorb the acid fairly rapidly."

After the publication of the tests by Corkins, the use of hydrocyanic acid in killing bees previous to burning for foul brood became quite general, and no ill effects have ever been reported from the use of honey taken from hives in which bees were killed in this way.

For the benefit of those who are not familiar with the technique of treating American foul brood, it may here be explained that the first object sought is the destruction of all bees in the infected hive in order to reduce the possibility of spreading the disease to other colonies. The hive and its contents are then burned or properly disinfected. Naturally the hives that require this treatment often contain a valuable amount of honey that must be disposed of. Experience has shown that the honey extracted from these hives is harmless as food for human beings unless it has been poisoned by contact with the fumes of the hydrocyanic acid.

It is the purpose of this article to describe a series of experiments made on samples of honey and comb that were taken from a hive at the Bee Culture Laboratory of the U. S. Department of Agriculture in Somerset, Md., immediately after fumigation with hydrocyanic acid. These experiments, which were both chemical and biological, had as their objectives the detection of any traces of hydrocyanic acid retained by the honey or the comb.

Experimental Part

Fumigation: The hive used was an ordinary 10-frame Langstroth three stories in height. It measured 17 by 18.5 by 25 inches, and had therefore a cubical capacity of 7,862.5 cubic inches, a large part of which was taken up by frames, brood combs, combs containing honey both sealed and unsealed, and the bees of the colony.

The fumigation was effected by placing two tablespoonfuls (about 30 grams) of calcium cyanide on a piece of paper which was pushed into the hive opening and the opening quickly closed. This was done on September 23, 1930, at 9:30 a. m. The weather was fair and very warm. The hive was kept closed until 10 a. m., then opened. The honeycomb samples were cut

* Food Research Div. Contribution No. 100.

[1] U. S. Dept. of Agriculture, Bul. No. 1149 (1923).

from 14 different frames which were located in what were believed to be representative parts of the hive space. The samples were at once placed in wide-mouth screw-cap sample bottles, which were then closed tight.

Chemical Examination: The chemical analysis of the samples was begun on the same day that they were collected and prosecuted as rapidly as possible to prevent any possible loss of the fumigant. In no case did a sample bottle on opening give any odor of hydrocyanic acid.

The method of analysis was as follows: A 50-gram sample of the honey-bearing comb was weighed into a 300-cc. Erlenmeyer flask, and 25 cc. of water was added, followed by 2.5 cc. of tartaric acid solution which contained 0.5 gram of the acid. The Erlenmeyer flask was at once connected as a part of a steam distillation apparatus, and the contents steam-distilled into a 200-cc. round-bottom flask containing 10 cc. of normal sodium hydroxide solution until the volume of liquid in the receiver amounted to 25 or 30 cc. The round-bottom receiving flask was next connected with a condenser and the liquid in it was evaporated under reduced pressure until the volume of the alkaline liquid approximated 5 cc. The round flask was warmed during the evaporation by immersion in a water bath that was kept at a temperature of 75°-80° C. by a small flame placed beneath it.

The residual alkali was just neutralized with normal acid, phenolphthalein being used as indicator, and the hydrocyanic acid was precipitated as Prussian blue in the usual way. The solution containing the blue precipitate was transferred to a Nessler tube, made up to 50 cc. with water, and the color matched against standards containing known proportions of hydrocyanic acid.

In Tables 1 and 2, showing the results, the lowest story of the hive is expressed by the letter A, the middle story by B, and the top story by C. The frames were numbered from one to ten from one side of the story to the other. Samples of comb and honey were taken from the different frames as shown in the tables.

After the honey samples were distilled, the residue was extracted with water and filtered on a Buchner funnel and well washed with water. The insoluble residue, including comb, wax, etc., was dried, and the dried residue was weighed. Owing to occluded water, the sample with the abnormally high wax content did not dry well.

Table 1. Hydrocyanic acid absorbed by 50-gram samples of honey.
Results expressed in parts per million.

Samples.		Comb, wax, etc. Grams.
"A—Frame 1—unsealed"	Negative	9.8
"A—Frame 1—sealed"	Negative	6.2
"A—Frame 5—unsealed"	Negative	7.8
"A—Frame 5—sealed"	Negative	10.6
"B—Frame 2—unsealed"	Negative	27.5
"B—Frame 2—sealed"	Positive[1]	11.7
"B—Frame 5—unsealed"	Negative	54.1
"B—Frame 6—sealed"	Negative	3.7
"B—Frame 7—unsealed"	Negative	14.3
"B—Frame 10—sealed"	Negative	3.5
"C—Frame 1—sealed"	Negative	3.2
"C—Frame 2—unsealed"	Negative	24.4
"C—Frame 6—sealed"	Negative	4.5
"C—Frame 7—unsealed"	Negative	30.6

[1] Not more than one part per million. A second distillation gave a doubtful positive reaction.

Sample "B—Frame 2—sealed" was again tested by adding 25 cc. of alcohol to the 50-gram sample, acidifying as usual, and bubbling dry air at room temperature through the mixture into a condenser from which the air passed into 10 cc. of normal sodium hydroxide solution. The reaction of this test was positive but faint, being less than 1 part per million.

Two 50-gram portions were taken from "B—Frame 10—sealed," and to these were added respectively 2 and 5 parts per million of hydrocyanic acid in the form of sodium cyanide solution. These were then steam distilled as in the case of the unknown samples. The amounts of hydrocyanic acid recovered were 1+, and 5 parts per million, showing that the distillation does not destroy the hydrocyanic acid in the honey.

Nitrogen was next determined on 5-gram charges of honey samples as shown in Table 2. The control sample here given was taken from the same lot of honey but was untreated.

Table 2. Nitrogen in 5-gram samples of fumigated honey.
Results expressed in percentages.

Samples.	Nitrogen. Gm.	Per cent.
"A—Frame 5—unsealed"	0.004483	0.0896
"A—Frame 5—sealed"	.001401	.0280
"B—Frame 2—sealed"	.004483	.0896
"B—Frame 10—sealed"	.005043	.1008
"C—Frame 1—sealed"	.002241	.0448
"C—Frame 6—sealed"	.005043	.1008
Control	.005043	.1008
Control	.005043	.1008

Experiments in Bee Feeding

Bee Feeding: Bees are very susceptible to the poisonous effects of this gas. The whole population of a hive is killed within a minute when exposed to the fumes from calcium cyanide, and when the entrance is opened for returning field bees these often die at the opening before they

have entered the hive. In general, it may be said that hydrocyanic acid kills insects even more readily than it does mammals, and for many years it has been extensively used for fumigating ships, warehouses, and other buildings that had become infested with insects and rodents.[2]

In order to find out whether sufficient hydrocyanic acid to poison bees had been absorbed by the honey, 75 bees were placed in each of three cages and fed with honey taken from this experimental hive. Samples of both sealed and unsealed honey were used, and a check cage was run, in which was used honey removed from the same hive before being exposed to the calcium cyanide treatment. To avoid excessive loss of any possible hydrocyanic acid contained in the honey, the samples being fed were placed in vials with cheesecloth over the top, and the vials were inverted and placed in a hole in the feeding cage so that the bees had direct access to the honey through the single cheesecloth. When the bees had emptied the vials, these were replenished from a portion retained in a closed bottle for that purpose.

[2] For bibliography see U. S. Dept. Agr. Bul. No. 1149, loc. cit.

No difference in the death rate of the bees was observable in the three cages. The experiment was repeated with the same result. In two experiments some bees died sooner in cages containing treated honey than did those fed the unfumigated honey, and in other experiments the reverse was true, but in no experiment was there more than the normal variation to be expected when bees are confined in cages.

Summary

1. A colony of bees, minus the queen, was poisoned by hydrocyanic-acid gas according to the customary procedure.

2. Samples of honey and comb as found together, were taken immediately for chemical and biological tests.

3. No odor of hydrocyanic acid could be perceived when the bottles containing the samples were opened.

4. In every case but one, chemical analyses of the samples of honey gave negative results for hydrocyanic acid.

5. When fed to bees honey exposed to hydrocyanic acid caused no greater mortality than did honey not so exposed.

Washington, D. C.

The Harvest in England

A. H. Bowen

Several Valuable Suggestions on Management Picked Up During the Season

Despite a magnificent lot of bloom the 1931 honey harvest was not more than a third of normal. This was due to lack of sunshine when the main flora was in blossom. Cold, rough weather during April and part of May retarded building up and it was almost mid-summer before work commenced in supers.

The extent of our "summer" consisted of ten days or so at the end of June and early in July, followed by a warm still week at the beginning of August when nectar was gathered freely and the colonies stored a certain amount for their winter use.

Comb honey was almost a complete failure. The interrupted honey flow induced the bees to finish off their work before the sections were properly filled, and in consequence a lot were unsalable. Where the apiary stood in a sheltered valley, however, results were more satisfactory and quite fair takes of two or three supers per colony were recorded. Much depended on how the swarming was handled. Where work was commenced by the old colony and finished off by the swarm, results were highest. Colonies supered with section racks have an ample ration in the brood-chamber; on the other hand, stocks to which shallow combs were given gave more surplus, but had an empty chamber below when the supers were taken away at the close of the season.

Prevention of Swarming by Early Requeening

This season with us colonies were overhauled for queen-cells as frequent as once in five days, which involved a considerable amount of work and upset the bees. We have now evolved a plan to cut out much of this work and the colonies so treated this year were ahead of any others in quality of surplus stored. For next season we therefore propose to proceed in this wise:

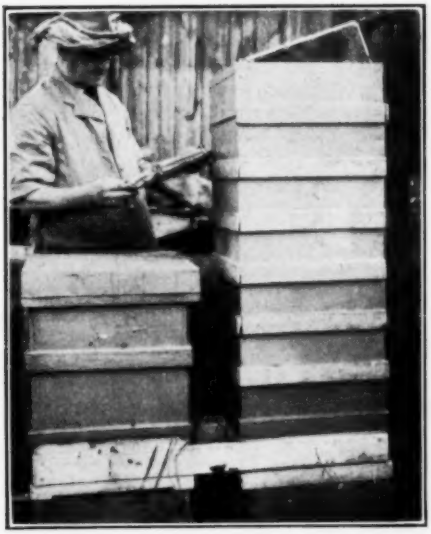
In the spring an empty hive with entrance in the reverse direction will be set

beside each overwintered colony. This hive will have quilts, and several combs or frames of foundation. When queen-cells are found under way in the colony, a nucleus is formed with the queen and placed into the empty hive. Every cell is taken down. Seven to nine days later another inspection will be made when all cells but one will again be taken out. The one left should requeen the colony.

Sections and shallow extracting supers are sometimes worked on the same colony. The shallow extracting super is usually kept next to the brood-chamber to avoid travel stain on the sections.

The earlier this can be done the better. The young queen will set the pace and fill the hive with foragers for the July honey flow, and, instead of the population dwindling as is the case when the old queen is retained, it will increase. Moreover, the bees under a young queen do not sulk and waste their time cell-building as they do when balked of their desire to swarm.

Some curious facts have been noted this season. Strong supered colonies having clipped queens, which had not been permitted to swarm by removal of cells and the addition of a second story, starved their queens until they shrunk to the size of a large bee. Next, they worried the queens until the latter ran outside and settled under the floorboard to be joined with bees to the size of a football. If a cell happened to be missed, a swarm then issued headed by a virgin queen. All this upset will be avoided by the plan detailed.



Arrangement for cleaning extracting combs. The colony (hive at left) has access to the pile of supers containing wet extracting combs (at the right) through a tube connecting the two shallow supers at the bottom.

Device for drying cappings. A shallow super is provided with a partition which contains two holes. A piece of tin or zinc is fastened to the lower edges to form the floor of the wide compartment, the narrow compartment being left open at the bottom. A tray with half-inch-mesh screen bottom fits into the wide compartment resting on two cleats. It is filled with wet cappings, and the super is tiered up among wet extracting combs. The bees do the rest.

Nucleus Plan for Preventing Swarming

It is proposed in some cases to graft queen-cells, then take out a nucleus and give it a cell. Later, when the queen is laying, the nucleus will be set upon the parent stand to catch all the flying bees, and will receive the supers which come off the removed colony. The latter may or may not yield any surplus. In the autumn it should be dequeened and bees run into the colony from which it was taken and the combs used or stored with the hive for use the next spring.

This, then, is the way we propose to operate each colony in the future, not only in our own apiaries but in the small apiaries of owners who do not look after their own bees but employ us to do so. They prefer us to get the stings, and to render to them the surplus honey from the season's working.

Cheltenham, England.

Beekeeping and Adventure

C. George Riedell

A "Rolling Stone" That Has Sometimes Gathered a Considerable Amount of "Moss"

When I was a boy about eight years old I used to sit on the old wood-box near the stove and devour books. One of my favorites was Robinson Crusoe. I had a wonderful copy, full of engravings and wood cuts. The picture that I liked most was one showing Robinson after he had escaped from the pirates in Algiers, fishing from a boat. There he was lolling at his ease, while a black man was doing the fishing. Underneath the picture was a caption reading, "So I bought me a negro slave." How nice, I thought. Wouldn't it be fine if I could have a negro slave to do all my work? Then I could live such a happy life.

At thirteen I left the wood-box and my little old home town in the state of Washington in search of knowledge, adventure and happiness. The idea in those ancient days was that life was marvelous and interesting. I believed that there was such a thing as "the great life." Until I was 27, I spent most of my time in the pursuit of knowledge in schools and in universities in the United States and in Europe. During all this time there was a great ogre pursuing me at every turn. His name was "struggle for existence," and he kept me very busy devising means to acquire enough money to fulfill my wants and my desires. Had I been born in Europe or in Asia I probably would have been destined to one or two different occupations, but being a free-born American, I was at times a newspaper reporter, a shingle weaver, an actor, a shipping clerk, a theatrical manager, a hoe-er of potatoes, secretary of the Michigan State Society for the Prevention of Tuberculosis, a salesman and anything that my constantly moving life demanded.

At different times in this career I used to curse myself for not having devoted myself to one special job, say, in a bank, or a store, or a newspaper, or what not, to work up to a secure place in life where the battle for existence would no longer intrude. But evidently one is born to carry his own particular cross. My desire for adventure and study and experiment would never have permitted such a course.

However, at 27, I suffered a great sorrow and disillusionment. I wanted to die and get away from everything. On the advice of a friend I went to southern California where I took up a little homestead in San Diego County overlooking the ocean, and began to lead the simple life. Gradually life took on a new meaning. I began to hear the birds sing once more, and took delight in watching the clouds float in the sky. I found that I could sit for hours in quiet meditation. It was in those years that the study of the classics of the literatures of all times (which I had browsed upon for years in a cursory manner) revealed themselves to me, and their authors lived with me in reality.

Inspired to Take up Beekeeping by Maeterlinck

One day I was reading Maeterlinck's "Life of the Bee." Suddenly, on that beautiful afternoon, surrounded on all sides by the sweet voices of nature, I realized that I was going to become a bee man. Could all those wonderful things that Maeterlinck wrote about be true?

The next day I was walking over the mountain side to get a jug of wine from an old Italian hermit friend, who later, it appears, became the grandfather of my children. From a pleasant spot on top of

the mountain where I sat down to rest and watch the blue ocean with San Clemente Island in the distance, I noticed a lovely grove of walnut trees and in their midst a lot of boxes painted white. I walked down the path leading to this spot and found seated in this grove a white-haired solitary old German. These were in the tranquil days of long ago. Could anyone now imagine that a person could actually sit down quietly for several hours in the beautiful sunlight doing absolutely nothing? The Italians have the right word for it, "dolce fa niente," the sweet-doing-nothing.

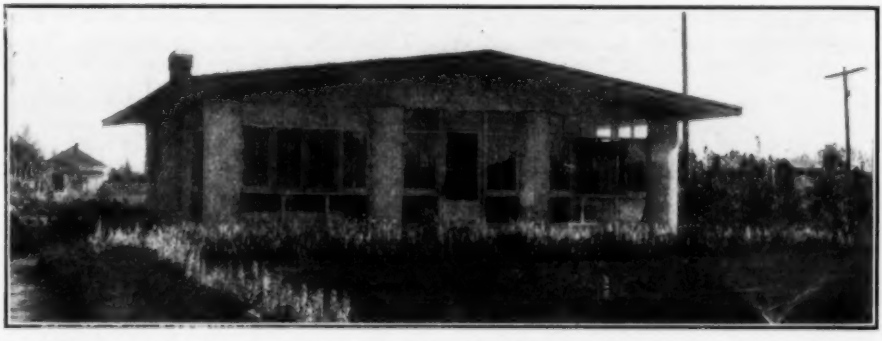
We talked for several hours, then he told me all about bees and how wonderful they are. But he was very disillusioned. He had a family. They needed money for clothes and food, and the bees had not brought anything to him for three years. On the contrary they had decreased from 115 colonies to 24. He seemed to be very unhappy; said he wished he had never seen a bee. It was just that moment that I became a beekeeper. I was poverty-stricken at the time, but I determined to get possession of those bees if I could possibly do so. Consequently, a week later I again meandered over the mountain and paid the first deposit of $50. He sold the bees and equipment to me for $150. That summer, with no knowledge of beekeeping save Maeterlinck's book as a guide, I produced three tons of honey and increased the bees to 72 colonies.

How miraculous and marvellous life is. As I garnered in this crop and saw the little fellows bringing in the honey with so much apparent pleasure, I realized that, although I could not do as Robinson Crusoe had done, I could not "buy me a negro slave," yet here I had a million slaves to

C. George Riedell, President, Riedell's Honey Ltd.

command! Was it possible, thought I, that I could defeat this ogre who had been continually making me do disagreeable occupations to gain my existence? Was it possible that these bees could do it for me?

Well, that year I married, and for two years more led the beautiful simple life in that country. Then something in my blood began to stir, and I felt a strong impulse to battle in new countries. I had been reading that wonderful encyclopedia of beekeeping, A B C and X Y Z of Bee



Headquarters of Riedell's Honey, Ltd. The building is made of mud and straw with walls 18 inches thick, stuccoed inside and out, with beautiful gardens on every side. The front is a replica of an ancient Doric temple.

Culture, by that great poet, and lover of nature, and good man, A. I. Root. I was also able to secure an original edition of Father Langstroth's book on the honeybee, interspersed, as it is, with lovely quotations from the Bible and his own beautiful life's experience. I determined there and then to give up the trashier occupations in life that had once attracted me and gain the economic freedom that I had always desired by making my livelihood from the bees.

Beekeeping Adventure in Guatemala

I decided to go to a new country to start in and bought a steamship ticket to Manzanillo, Mexico. When we got there the generals Carranza and Huerta (great men then, to underlings and to the newspaper public, but forgotten now) were having a big battle in the town. The boat couldn't land, so I was disembarked in Guatemala, Central Ameica, with a capital of $168. Imagine starting in beekeeping under these conditions in a country where bees had never been heard of. I sent up to the United States for some breeders, got a stock of bees from hollow logs from some of the natives, later built a factory for making bee hives, later, a canning factory for canning honey for export, and eventually built up quite an important business known as the North Tropic Honey Company. At the end of three years and a half I sold the whole thing for $42,000. Mr. Tollafield of The A. I. Root Company visited me in 1920, just after I had sold out, and wrote a little article in Gleanings in Bee Culture about my work there.

The love of adventure gives a man many pleasures that those who live a more tranquil life rarely experience, but, as a recompense, they are spared the bitter agonies to which the adventurer must always succumb. I left beekeeping to engage in bigger enterprises. I made a fortune, but in the end lost everything. The worst loss was my peace of mind and the quiet pleasures and illusive hours of happiness that come to one only in simple ways, and that those devoted to the idea of making money and making a big noise in the world seldom find.

An Adventure in Western Canada

Instead of committing suicide to "end it all" I once more decided to become a beekeeper, so I came to Alberta, from which place I am now writing. I have been here six years caring for and educating my three motherless sons, producing honey, growing flower gardens, building nice houses and honey extracting plants, devoting at least half my time to study, and trying to figure out the meaning of life.

We produce quite a lot of honey here; in fact, our bombastic slogan is "Largest producers of highest quality table honey in the British Empire." This year has not been a good year. In my Taber plant we got only 150 pounds per colony; in the Coaldale plant we averaged 170 pounds. Last year we did much better; from 1500 colonies I produced 360,000 pounds.

During the last two years, with prices dropping right and left, it has been very discouraging, in fact, a year ago at this time after seeing my profits drop so rapidly, I vowed that I would give up this illusion of trying to make a pleasant livelihood as a beekeeper. But during the last year my outlook on life has changed considerably; I am now resolved that, come what may, I shall always be a beekeeper. It is the most satisfactory life that I know. I would rather be a beekeeper than a banker, a politician or a university professor.

The danger at this time for all of us moderns is that it is so easy to fall in with this idea of money making. It seems almost impossible to get away from it. But why should a man wish to save a lot of money so as to remain idle later. Would it not be much better to live as Dr. Miller,

A prairie apiary. This yard of 75 colonies produced an average of 300 pounds per colony. Alfalfa and sweet-clover fields surround it on all sides.

A. I. Root, Harbison, Crane, Quinby, Dzierzon and the other great lovers of nature and of bees, working to the end, in the very heart of nature, at its best?

An Adventure in China

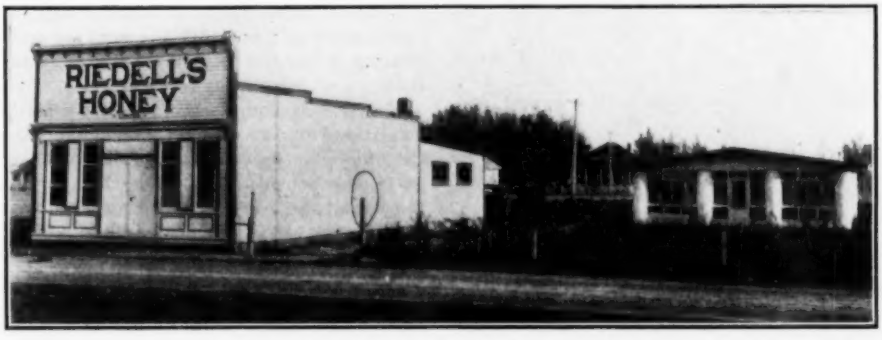
But my old love of adventure calls me forth. The wanderlust is in my blood. I have leased this business to Mr. Gear and my brother, and I am leaving Alberta in about ten days. During the last two months I have been engaged in preparing 1200 three-frame nuclei which I am going to take with me to China. I shall sail with them on the Empress of Russia from Vancouver on November 21. I have always wanted to live a few years in the Orient, and when I learned last year that the Chinese were interested in developing modern bee culture, I determined to go there and help them do it. I made two shipments this past year from San Francisco to Shanghai, shipping the bees in a ventilated refrigeration chill-room. The Chinese spent large sums during the summer of 1930 purchasing bees from Japan, but, as I have learned just recently, these bees were badly infected with American foul brood, and, since those purchasing them have little experience anyway, they have become somewhat disillusioned.

I have spent a great deal of time and money trying to make this a perfect shipment. About 300 of the nuclei will be headed by new queens just purchased from the best queen breeders in the United States. The balance have been raised in the last two months by my queen breeder, Winfield Gear, of California.

I look forward with the most intense enthusiasm to this adventure. Think of entering a wonderful old civilization like China not as a tourist or an onlooker, but as one who will take part in their real life. Think of the pleasure that one will derive from as simple a thing as studying the Chinese flora from the deep interest, whether the flowers are nectar-bearing or not, that I must have as a beekeeper. I am not going to sell these bees. I hope to found a school to teach beekeeping to every clever Chinese boy who comes to me to learn how to escape this ogre, "struggle for existence," by gaining his livelihood by the bees. I can not take with me a negro slave to administer to my wants, but I am sure that my little bees will be the means of opening up the gates leading to leisure, to adventure, and to "the great life" that I dreamt about on my mother's wood-box.

Taber, Alberta, Canada.

Winfield Gear, queen breeder, introducing queen cells into nuclei for the shipment to China.



Extracting plant and office of the Taber branch.

Vicious Bees

In the beginning of my beekeeping experience I was fortunate in getting a start with gentle bees. Having kept gentle bees for years I learned later that a different system of management has to be adopted when keeping cross bees. My information along this line was gained by experience and as Josh Billings put it, "Experience is a good teacher but the tuishun cums purty hi." I came into possession of some bees running in color from pure black up to three bands and I never knew that bees could be so utterly vile in disposition. It was an entirely new proposition with me and I almost had to learn beekeeping all over.

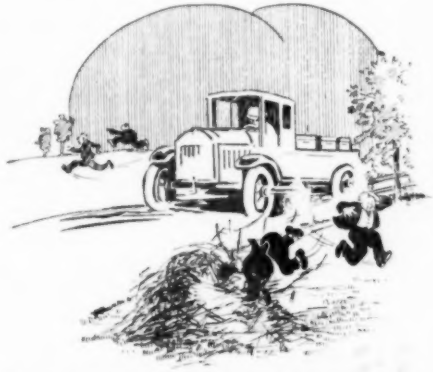
We moved about two hundred of these demons to the farm of a friend, or, more properly speaking, he was a friend till I moved those bees on his farm. He asked if the bees would molest his horses. I told him they would not bother anything a few feet away for we had bees within twenty feet from our doorway and they never bothered. However, to play safe I put the bees over a hundred feet from the road so that all would be well.

But things were far from being well. Those bees stopped traffic on that road as effectively as would a sign "Bridge Out." Rumor had it that there was a bootlegger joint down that road and that their business had had a terrible falling off after the bees were moved there. We hauled bees on a truck and the sight of our truck approaching would send the natives scurrying to cover. Once I was going to the yard with a few empty supers but no bees when a man saw me coming and cut around through the fields, giving a margin of safety of over a hundred yards.

A farmer with four black mules hitched to a disc tried to navigate that road but when opposite the bees the driver gave the command, "Full Speed Ahead." The mules on the side next to the apiary put on more speed than the others which caused them to travel in a small circle. This brought the other mules on the hot side which equalized things and all started across the field. It is stated down there on what is considered good authority that there was the greatest amount of discing done in the shortest space of time ever known in those parts.

A big black dog came over to visit me one morning but in a minute he was going like the wind bellowing so he could be heard a mile.

In working with them I had to construct an entirely new suit and veil, and learned just how much clothing a bee could sting through. One thickness of cloth was little better than nothing and I received a terrible punishment in a few minutes finding this out. Two thicknesses were much better but to be real safe I found it necessary to wear thick



The sight of our truck approaching would send the natives scurrying to cover.

underwear, then a pair of woolen trousers and overalls. Once I forgot to tie the bottom of my trousers and the bees crawled up my trousers' legs and got into my veil!

Those were the most resourceful bees I ever saw. No matter how much smoke we used they would completely cover us till our suits became white with stings. In this connection I have a story to tell that may seem rather large which in reality is small when you consider the bees we were dealing with. But the story is true. Here it is:

Those bees completely put a perfectly good smoker out of commission. I got a splendid new smoker. It was one of those extra big Root Jumbos. It worked to perfection at first giving out smoke enough to lay a smoke screen for a fleet of battleships. After using it on those bees a few days it began to give off less smoke till in about ten days it would not smoke enough to make a mosquito sneeze. It

(Continued on page 796.)

From the Field of Experience

HONEY IN SOLID FORM

Possibility of Removing Objectionable Stickiness by Evaporating Water

In spite of the fact that nine people out of ten consider honey as the most healthful sweet, only one out of ten ever eat it to any large extent. Any one who has had experience selling honey to housewives know that, in spite of all affirmative reactions to your sales talk about the healthful properties of honey, they don't very often buy it, no matter how low the price.

This puzzled me for quite awhile. I gave a friend some honey and at the dinner table it had a place of honor. The two nephews of the man made a dive for the honey with spoons, dipped deep into the golden honey, hauled out the dripping spoonfuls to their plates. The result, of course, was golden streams of honey trickled on the clean tablecloth between plate and honey jar. As nine wives out of ten would do, this one saw to it that honey never graced that table again. Children can't waste their time winding up the drip on the spoon and most people don't know about it.

Another sad experience to the housewife is in cooking with honey. If you've ever tried measuring out "1 cup of honey" no more need be said.

It is a sad fact that the physical nature of honey, its stickiness, is its greatest drawback. Many people like honey but would rather do without it than have the job of cleaning the mess it makes after it is used. Ordinary sugar, on the other hand, which in fact, may be harmful to health, is used to the tune of over 100 pounds per person per annum on the average. But, oh how easy it is to use, to pour, measure, dip. It is clean with no drizzly stickiness that seems to get on everything. Also it needs no expensive containers like glass or tin.

It would be a sad tale if nothing could be done about it. I firmly believe that something can be done, and that is to make honey just as easy, clean, and convenient to use as sugar. All that needs to be done is to remove the 20 per cent of water which honey contains and make it into a dry crystalline form like ordinary sugar. What a blessing that would be! Then honey could be made into a commercial proposition. Its character would be unchanged by time, cheap containers could be used, and all other conveniences in handling that would go with honey in the solid form. This would be a rosy proposition but for one fact: the levulose in honey is of an aristocratic nature and refuses to stoop so low as to form crystals like common sugar. Boiling in a vacuum will take out most of the water, but the levulose will not crystallize; it remains in a hard taffy-like mass.

I haven't heard as yet of any one producing a dry crystalline honey. From what little experimenting I've done, and according to a few laws of chemistry, I believe it can be done in at least one of several ways. Honey is very sensitive to heat and must not be heated too high in any process. Dry crystalline honey would naturally be deliquescent, but it would remain crystalline under ordinary conditions if kept covered. When the opportunity comes, this problem will probably get more serious consideration.—Charles Mraz, Middlebury, Vt.

BEEKEEPERS OF TOMORROW

Younger Men and Improved Methods Replace Older Type of Beekeeping

We are all very much of the age in which we live. We see change behind us but revolt at the idea that our cherished orthodox method of beekeeping will be superseded in a few years and things which we now say will not work, will be common practice.

We know comparatively little about bees and honey, and our children will discover that much which we think we know isn't true. Possibly as much progress in beekeeping has been made in the memory of men still living as in all beekeeping history before. The future promises to be even more revolutionary than the past.

One of the unmistakable evidences of impending changes in beekeeping is the new type of beekeeper. The beekeeper of yesterday was often the eccentric of the community, often lived alone, and perhaps his place and person were untidy. His mind was keen but superstitious. He "could work without a veil and never get stung." He mixed beekeeping with hunt-

ing, fishing and trappings. This "Me-and-Ab" hound-dog type of beekeepers is rapidly passing.

A new type of beekeeper is appearing. They are fewer in number, but they keep more bees. They are young men who are thinking of beekeeping as a profession. They read bee books and magazines, they attend bee schools and conventions, they paint their hives, they put their honey up in new containers and cellophane.

Age, together with the declining price of honey and bee diseases, is eliminating the old side line beekeeper. The beekeeper of the future will meet declining prices with a lower cost of production made possible by large-scale production.—M. N. Dillon, Sand Creek, Mich.

TYPES OF OBSERVATION HIVES

Attracting Attention of the Public to Bees and Honey

The value of observation hives at fairs, in show windows, and on other occasions is often overlooked by progressive beekeepers who should have a supply of several different hives. Aside from the conventional types of such hives, a number of interesting varieties should be constructed.

At the right in Fig. 1 is shown a miniature bee hive with a one-gallon glass jug built into the lid. As it appears that the jug is standing on the top of this hive, many and varied are the questions asked. People do not realize that the bottom is out of the jug. The hive itself is made of plaster of Paris, and enameled white. The other hive in Fig. 1 is built from beeswax and gives the effect of a cobblestone gateway leading into a court where a small swarm of bees is clustering on a tree made of beeswax. Honeycomb can be seen in the tree; and it helps to keep the little swarm in its right place. This hive has held the spectators well and has received many comments.

Fig. 2 illustrates a fine observation hive, which also is practical and instructive. It is made from a new standard 8-frame hive with comb-honey super, by cutting into two equal parts as shown. Each half has a good grade glass over the exposed part and on the glass is painted the inscription, "The Inside Story of a Bee Hive." This hive appears to open up like a book and the inside story told on its pages. Hives like these are sure to give you the "blues" at any fair.

In Figs. 3 and 4 are shown single-frame hives that are made of wood and covered with a coating of artex (art clay) and finished off in bronze of many colors blended together. This gives them a very artistic appearance and individuality. Any home-made observation hive can be made over in this way.

Fig. 4 illustrates a hive that I placed in a public school room here in Pueblo at

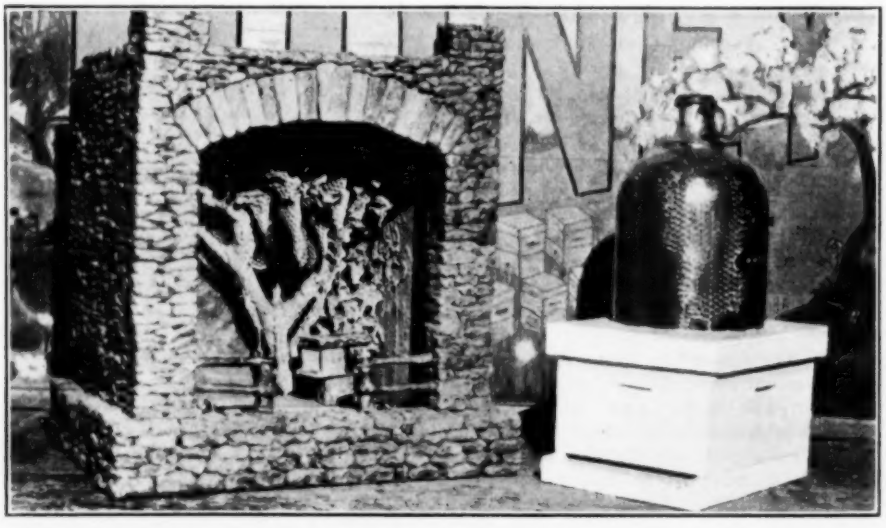


Fig. 1.—This miniature observation hive and the figures made of beeswax attracted much attention at the Colorado State Fair.

Fig. 2.—This hive being split through the middle gives spectators an opportunity to see the inside of the hive.

the request of an instructor for the studies of the pupils. This was left at the school until the end of the term at which time I had a very nice letter from the pupils telling what they had learned about bees, how they enjoyed them, and expressing their gratitude.

There are endless ways to make observation hives. Any hive is good that will entertain or instruct even if it is only a primitive log gum.

I have won prizes for bee-and-honey exhibits at the Colorado State Fair during the last four years, representing close

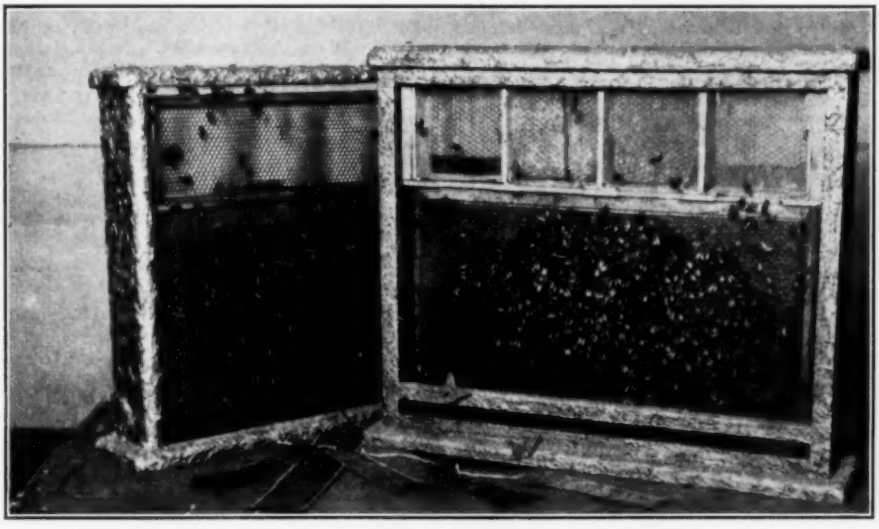


Fig. 3.—Single-frame observation hives with fancy finish.

to $400 in cash. There were 34 firsts, 16 seconds, and 4 thirds, 54 prizes in all. I feel well repaid for my efforts.—G. A. Pauli, Pueblo, Colo.

We women-folk are silly creatures. We work ourselves into nervous wrecks, getting rich food ready for that great day, and it results in sick, irritable children,

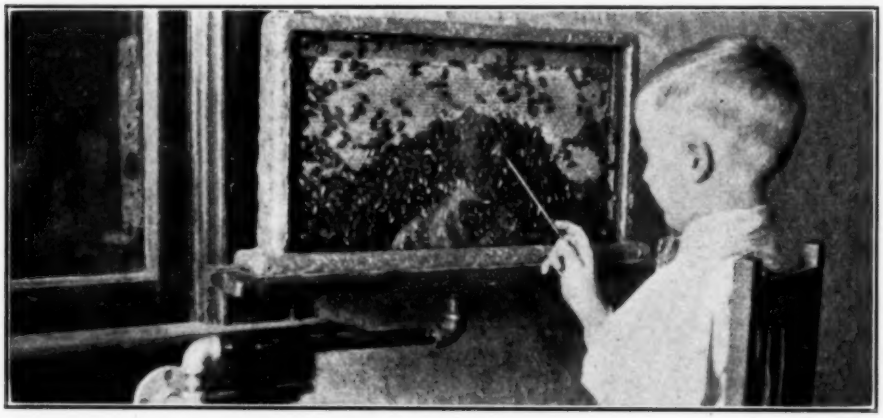


Fig. 4.—Observation hive designed for use in schools.

SPINSTER JANE SAYS—

"Behold I bring you tidings of great joy," sang the angel as it announced the birth of the Christ Child. Then a multitude of angels joined in the first Christmas Carol, "Glory to God in the highest, and on earth, peace, good will toward men."

Another Christmas is here, with many out of work, sad, and disheartened; poverty and want everywhere; China and Japan ready to fly at each others' throats; bloodshed and the horrors of war hanging over us all; little children, sobbing over empty stockings.

Peace is not yet. Still we can rejoice because of the promise. "Good is in His Heaven," surely "all's right with the world." Just keep your courage up, and hope on.

Look at the beehive out in the cold, covered with snow, yet inside, in their dark prison, thousands of bees cluster, content with the food before them. Their trust is wonderful. It is instinctive. Spring is soon coming with its sweet fruit blooms and clover nectar, its sunshine and warmth. If they can not have the choicest clover honey, well, syrup will do.

If we can not have turkey and plum-pudding, let us have plain fare then. Ten to one we will feel much better after it than after the regular Christmas dinner. What's the use of spending so much time and money on one dinner, anyway?

and grouchy, overstuffed men. Let us cut it out this year. The men may grumble, but let them. The way to a man's heart is through his stomach, we all know. The way to his pocketbook lies the same way. The two, heart and pocketbook, are very close together. Their stomachs are well-catered to, to open either. Poor Esau lost his birthright because of that failing.

Let us do without that rich fare, this year, rather than disappoint the children. What if we skimp, go on one meal a day, drawing the belt a little tighter, so long as those little stockings are filled. Let the youngsters keep their bit of faith in Santa Claus. He is a very real, very beloved personage, to them. Don't disillusion them until they are older. They must lose their dreams soon enough.

You wealthy folk, secure in your comfortable homes with nothing to worry over except the fear that the bank may break, get busy. Shake off your lethargy. Brighten some kiddies' Christmas morning. See that a few at least have bulging stockings. "It is more blessed to give than to receive." Prove it. If you are jaded, tired of everything, sated with rich food and surfeited with pleasure, shake off your selfishness, make some little ones happy, and see the magic it will work in your heart. You'll have the true Christmas spirit, and joy will bubble up, filling it to overflowing.

Dig down through the snow to the hive

Type of double-walled hive widely used in the New England states.

entrance, and what do you find? A big hollow there. Not content with warming their hive, the warmth they generate spreads further. See?

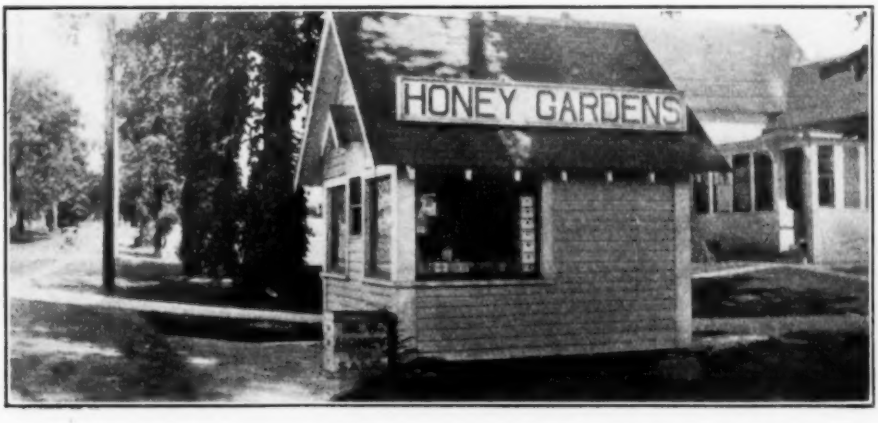
Let the warmth and cheer of Christmas fill your home and heart and spread further. Learn another lesson from the little bees. Don't slave to cater to the menfolk this year. Take Spinster Jane's advice and make it the Children's Christmas. —Jane.

A GRANITE STATE BEEKEEPER

Why Apiaries in New England Are Smaller Than in Other Regions

Mr. P. N. Townsend of Lebanon, N. H. (Grafton County) is one of New Hampshire's foremost beekeepers. In fact, I believe he is the most extensive apiarist of that state. He is conveniently located on U. S. Route 4, which is cement at this point and a heavily traveled highway, making it an ideal location for the honey house shown in the picture. This honey house is an innovation for this section where few beekeepers do extensive enough business to warrant having one. It is also a welcome relief from the general run of roadside stands which feature hot dogs, gasoline, candy and cigars sometimes to the detriment of the landscape. Townsend's honey stand fits nicely into the general layout of buildings and depends for its advertising upon some rather conservative signs coupled with attractive window displays of comb and extracted honey.

Single colony cases, like that shown in the picture, house a large portion of the Townsend bees both in the summer and in the winter. They are a popular type of case often seen in this section. In summer, with the top packing removed,



A roadside stand designed to harmonize with its environment.

This truck also plays an important part in selling the honey crop.

there is often enough room for supers inside the case while if more room is needed the supers may be added just the same, letting the cover of the case rest on the top super. Bees winter well in these cases, some colonies having been in existence for years in them apparently impervious to discussions in bee journals as to whether they were packed right or not.—Robert M. Mead White River Junction, Vt.

MOVING BEES TO TUPELO

Building Up Where Pollen Is Plentiful Then Moving to Main Nectar Source

I am sending some pictures of our bee yard located along the Old Spanish Trail near Chipley, Florida. These bees, consisting of some 300 colonies, are moved each spring 50 miles or more into the Choctawahatchee River swamp where we secure a crop of fine-quality tupelo honey. After the honey flow from tupelo they are moved back to our home yard where they secure sufficient stores to carry them over until the next spring.

The truck shown in the pictures is used not only to move the bees, but it plays an important part in disposing of our honey which we sell through the retail stores in Florida, Georgia and Alabama.

By paying careful attention to handling and packing, we have in the past enjoyed a good business, but the poorest crop in years, together with the depression in business, has hit us a wallop below the belt. Our hat is still in the ring, however, and here's hoping that the near future will find us all enjoying the fruits of prosperity.—A. E. Hodson, Chipley, Fla.

A 300-colony apiary in Florida that is moved twice a year—to and from tupelo.

From North, East, West and South

Northern California

Weather continues fine over the entire northern part of the state, and it is only in the high altitudes that bees are in winter quarters.

In September we recognized the beekeepers' New Year and more bees than usual were put in good condition to come out right for the earliest honey flows of 1932. Now we are deeply interested in the Honey Year. We sometimes say honey week is every week in California. This was never truer than it is today. We find honey moving along nicely in a retail way and the demand for larger lots is looking up quite a little. Prices are better than for sometime past; in fact, better than for any other farm product.

Northern California never experienced a greater effort to advertise honey than is taking place today. For the past two months an active committee from various departments of the state has done splendid work in preparation for National Honey Week. This has included newspaper publicity, talks by radio and in schools and civic organizations. The demand for speakers has been a surprise to the committee and has not decreased now that Honey Week has passed. Some of our largest gatherings for bees-and-honey talks are yet to come. This goes to show that a united effort always brings results. The sales of honey over the entire state has been stimulated. Retailers and roadside stands are making greater efforts than usual to popularize honey and push the sales.

Bees Offered for Sale Are Being Taken Over by Younger Men Who Operate in a Businesslike Way.

There has been a tendency on the part of some of our beekeepers to become discouraged by the depression and sacrifice their bees. This has discouraged some of our leaders, but they are finding the industry will not suffer from such changes. Investigation has shown that the bulk of such sales has been made by beekeepers who have other large interests and feel that they must lighten their loads. Another class that has sacrificed bees is the behind-the-times beekeepers, and the industry will not suffer by their going. On the other hand, many of the bees changing hands have fallen into the hands of younger men who have given the matter careful study and are rapidly coming to the front. They will continue at the front for they are not only students but also workers. They are not expecting their bees to do all the work and board themselves. They are commencing with well equipped outfits from the hive to the honey house, and will run their business in a businesslike way. Another encouragement is the fact of honey finding a market at home. Every day brings out something new in the uses of honey.

The arrangement committee preparing for our annual convention which has just past, put in two months or more urging beekeepers to a greater effort along all of the above lines. One of the many results obtained by this committee has been to bring about a finer co-operative spirit binding together in a closer organization all of the agencies interested in the beekeeping industry. This includes the Department of State, the Pacific Coast Experiment Station and the University of California. Our association has been instrumental in accomplishing many worthwhile things for our beekeepers and can be depended on in the future.—Cary W. Hartman, Oakland, California.

Southern California

October is past with little rain in southern California. The month was warm most of the time with the hottest day on record reported in Los Angeles. Verily no one can foretell the weather a day ahead any more. Soon after we came to this part of the state the writer asked an old timer who had spent the greater part of his seventy years in southern California, "Do you think it is going to rain?" His answer was, "You should ask a man just out from Boston. I have been here so long that I do not know anything about it." Many are prophesying about the weather, whether we are going to have a rainy winter or a dry one, but after all it seems, when all is said and done, that very little is known about it. We have quite accurate records of the rainfall for the past fifty years but even with these to judge by, it is hard to come to any conclusion as to any definite cycle

whereby one can forecast a dry or a wet winter.

Riverside County Honey Producers met in regular monthly session at the home of county bee inspector C. A. Wurth in Riverside, October 30. Informal discussion of topics pertaining to beekeeping took up much of the evening. Distribution of the prize money received at the Los Angeles County Fair and election of delegates to represent Riverside County beekeepers at the state meeting was also part of the business of the meeting. C. A. Wurth and Chas. Kinzie were elected delegates and Jas. Moore and C. M. Kennedy as alternates. Money was also voted to pay expenses of the trip.

The question of taxes on bees has been discussed at different times at our meetings. Riverside County assessed them at $1.50 per colony, which is supposed to be one-third their value. This makes the tax about 7½ cents per colony. At our meeting in Riverside we thought this fair and equitable, and it was the opinion of those present that all bees should be on the tax rolls of the county. The county is paying out money for inspection and it is little enough for the beekeeper to pay the small amount of tax on his bees.

Many Colonies Will Have to be Fed to Make Up for a Lack of Honey for Winter and Spring.

Bees throughout the country are in only fair condition for the winter. We did not get the "fill up" that we would like to have had. Considerable feeding has already been done and more will have to feed if bees are to go into winter with sufficient stores to assure early strong colonies for the orange and black sage.

Honey prices remain about the same. There is little more inquiry from buyers but it seems that they were trying to feel out the beekeepers and find the amount of honey on hand rather than to buy. But there is no great amount in the hands of the producers and it looks as if it will be well cleaned up before the new crop comes on the market.

Very few bees are offered for sale, and beekeepers generally feel that honey will come back in price as soon as anything else that they might get into.—L. L. Andrews, Corona, Calif.

Arizona November has been generally warm. Bees have continued to gather pollen the entire month, so now they are well supplied with both honey and pollen. Several producers tell me that their bees are going into winter much heavier than usual. While too much honey is not best for perfect wintering, they should winter well where they have plenty of pollen and honey.

It looks rather strange to see some mesquite putting out a new growth of leaves and also blossoms just at the beginning of winter. It is rather a rare thing to see at this time of year.

While prices have not been very satisfactory, several cars of honey have been shipped out, cleaning up the light amber honey entirely in some localities. Producers just figured that there was very little hope of prices advancing.

There is very little water white honey in the state. What is here is being held for better prices. Most producers are selling off their darker grades, holding their best.

The Arizona State Fair at Phoenix will be held this month. Several different counties are preparing exhibits for the fair. The honey and live bee exhibit usually draws its share of attention. Usually there is a very good display of Arizona honey showing the public what can be produced over the desert region.—Leslie Wedgworth, Oracle, Arizona.

Utah This is November 2, and we have had only one inch of moisture since last May in this part of the state. Temperatures have been five degrees above normal for the past month. We have had one or two light frosts so far. About six inches of snow has fallen on the tops of mountains but most of that has melted. It is getting most too late for much rain from now on, and, unless there is an unusual amount of snow fall this winter with an abundance of spring moisture, all honey plants as well as the bee men will look sick next season.

It takes a lot of drouth to hold down dandelions, and, of course, willows grow in damp ground. These are the main sources for early honey. Sweet clover has about disappeared on account of three dry years.

Some feeding has been done, but not enough. Some have their bees packed for winter. The weather has been so warm that bees have flown most of the past

month which means an unusual consumption of honey as bees were getting some pollen as late as October 28. They cut down brood rearing early in September. This, together with light stores, does not argue well for good wintering.

When we consider the poor purchasing power of the country, the local sales of honey have been good. The indications are that the markets will be bare before another crop is on the market. Prices have already stiffened somewhat.

A Short Crop Caused Beekeepers to Market Their Honey Locally Instead of Shipping It Away While Dealers Imported Honey.

One new feature about the local markets is the increase in honey in tin. Heretofore producers have shipped their honey in carlots or in assembled cars, leaving the local markets mostly to the bottlers, while this year there were no carlots and producers have put their honey in five and ten-pound pails, thus giving the consumer his honey much cheaper than in the bottled goods.

With the sugar beet checks coming in now and a fifteen-cent raise in the price of wheat, I look for a fair volume of business in all our local markets on honey from now on.

Much harm is done by price cutting. One quite large producer thought if he could get rid of his crop that would be all he cared for, so he filled up the chain stores and some of his honey has sold at 69 cents for ten-pound pails, while 100 miles north in Wyoming 10-pound pails sold at $1.10. But 69-cent honey is gone now and those who held are getting a better price.—M. A. Gill, Hyrum, Utah.

Texas The weather during October was a continuation of the hot, dry weather of September. It seemed as if summer had been pushed over into autumn. The hottest day of 1931 occurred in September and one day in October lacked just one degree of reaching the same point. The rainfall has been very little. The hot, dry weather did away with anything like a honey flow. Broomweed in the southwest district gave the bees sufficient nectar for brood-rearing. Yellowtop came in with its addition of nectar and pollen. In west Texas and north central Texas broomweed, sumac and a few other fall blooming plants gave the bees a small surplus. There has been no surplus reported from the fall blooming of cotton. In south central and east Texas, fall composites and especially goldenrod have given some surplus.

As a rule bees are in fair condition to go into winter quarters. Two localities reported colonies low in the amount of brood and bees, but on the whole an average condition exists.

If rain does not come in a short time the chance for a spring honey flow from annuals and horsemint is not good, but in the southwest the chance for a spring honey flow from huajilla, catsclaw and mesquite is good.

Good Results Are Being Obtained by Advertising Honey Locally by Individual Beekeepers.

The interest in advertising honey seems to be at a low ebb. However, a large number of letters coming to this office have the National Honey Week label on them. Many of the larger beekeepers are positive in their statement that the national advertising campaigns do them more harm than good. However, they are putting on local campaigns in their individual territories. While the price has not advanced any, this activity has brought about a demand for honey that is better than for many months.—H. B. Parks, San Antonio, Texas.

North Dakota Much rain fell over the state during the latter part of October, with the result that the soil is well saturated. This should put the clovers and other plants in good condition for the coming year.

For the past few weeks most beekeepers have been giving special attention to preparing their bees for winter. An increasing number are wintering their colonies outdoors. A few are using the regular wooden cases with the usual packing materials, while others are using tarred paper cases over the packing. Packed colonies have wintered well during the past two years, which is encouraging to those who prefer this method. Colonies to be wintered indoors are usually placed in cellars about the middle of November. So far as can be ascertained bees are going into winter quarters fairly well provided with honey.

With National Honey Week drawing near, beekeepers in a number of towns of the state are making preparations to feature the product of their apiaries then. The idea of having a special time, like this, set apart to advertise honey is a real step in progress and should be continued each year.

The Home Economics Division of the North Dakota Agricultural College has prepared a bulletin showing how honey may be used to advantage in various forms of cookery. The bulletin is now in print but it is expected that a limited supply will be ready for distribution during Honey Week.

Progressive Officials in Another State Decide to Substitute Honey for Syrup in All State Institutions.

In a letter received a few days ago from the chief purchasing agent of the State Board of Administration is the statement that the Board intends in the future to buy honey, instead of syrups, for the various state institutions. This is very encouraging news.

It is planned to hold the annual meeting of the North Dakota Beekeepers' Association, January 21-22, at Fargo, in connection with Farmers' Week at the North Dakota Agricultural College. Beekeepers will find much of interest in the program being planned for this meeting.—J. A. Munro, Fargo, North Dakota.

Iowa The fall weather continued exceedingly favorable much later than is normally to be expected. This favorable weather allowed the bees to adjust themselves and to go into winter quarters very satisfactorily. It allowed packing to be completed before severe weather had set in. It is interesting to note that more producers are becoming interested in the problem of wintering each year and it is to be hoped that this number will continue to grow, for it is thought beyond dispute that the big problem in honey production in this state is that of reducing winter losses. There is a tendency on the part of a large number of producers to underrate the losses by poor wintering and to over-emphasize the losses caused by disease.

Some rather careful weights have been taken on a fairly large number of colonies, and the results indicate that good colonies well supplied for winter early in the fall lost quite heavily in a seven weeks' period. Eight to ten pounds loss for a good colony is really more than was anticipated. It shows why it is necessary to provide plenty of stores early in the fall if the colony is to winter successfully and be prepared to start the upgrade the following spring.

A great deal of interest was taken in the local support of the National Honey Week. Beekeepers in general were quite active in following up the national campaign with local co-operation. The Homemakers' Hour over WOI on Thursday, November 12, was devoted entirely to honey talks by Messrs. Paddock and Pellett. In this way the national broadcast by Betty Crocker was brought to the attention very timely to the radio listeners of Iowa.

Action was taken by the State Beekeepers' Association looking toward changes in the foul brood law with reference to the development of funds with which to carry on inspection work. It is to be hoped that these changes can be incorporated in the law at the next legislature which meets the coming winter. It has been exceedingly difficult to secure general appropriations for inspection work and the logical alternative is to secure local funds very largely from producers where they are interested in the clean-up of apiaries.—F. B. Paddock, Ames, Iowa.

Colorado It is not too early to prepare for the Christmas honey trade. Specially made Christmas labels on bottles and cans are not to be overlooked as a means for inspiring people to new thoughts for Santa Claus. Shoppers are constantly hunting new things and ideas for that occasion. Christmas trade in honey dollars means more to me than for any other month.

Here is a Quick, Sure Method for Losing a Honey Market; Also a Suggestion as to How to Hold a Market.

In northern Colorado we have just had an excellent demonstration of how to lose a honey market. Normally, this is the largest and most concentrated honey producing section of the state. This year's crop failure, combined with little or no holdover, left the markets bare of honey.

Here was an excellent opportunity for local beekeepers to buy some honey and make a little money on sales when little was in sight from production. This policy has been frequently advocated, from many sources for several months. The suggestion does not seem to have taken hold and this market has been taken by an outsider. An enterprising producer, from a more favored location, sensed the opportunity, loaded his truck, and is covering the territory to good advantage to himself and to the honey business in general.

Who will supply this market next year, the local beekeepers or the ambitious outsider? The producer from other parts is to be commended for his perception of the opportunity and for his effort. He has performed a service to the community which is hungry for honey, and he is being rewarded for his effort not only this year but perhaps for other years.

October and November have been unusually warm to this date. No killing frost occurred until about the first of the latter month. Days have been warm enough for free flights by the bees. It might be thought that stores would be reduced rapidly, but scale colonies do not indicate any appreciable weight loss. Apparently bees have been securing a little nectar from fall flowers, adequate for immediate needs. Brood-rearing during the late summer and early fall was below normal, due in part to the crowding of queens with honey in the brood nest. In most cases, colonies refused to place any honey in the supers, preferring to stock the brood-chamber for winter.

In less favored localities, stores are short and wintering prospects do not look bright. Some beekeepers are planning to winter their bees on present stores, feeding early in the spring as needed. While such plans are good, if carried out, we should not forget that there is at least one highway paved with just such good intentions.

Other producers are uniting up to 25 per cent of the weaker, ill-provisioned colonies with strong members, to save stores. It is planned to re-establish the number on early spring bloom by increase with the purchase of queens. It sounds like a good plan even in normal years when dandelion, willow and other early flora is plentiful. The writer is not unsupported in the belief that we have too many bees too early in the season in many parts of Colorado.—R. G. Richmond, Fort Collins, Colo.

Minnesota

Following a dry summer Minnesota had an unusually mild fall. There were enough occasional rains during September and October to keep the surface soil moist and bring out a good growth of white clover even in places where beekeepers had thought it had been killed out entirely by the hot dry weather of the summer. Prospects for next season so far as the condition of the honey plants is concerned at present are very much better than a few weeks ago. The late mild weather and the moisture have given opportunity for abundant growth. The sub-soil, however, is very dry, and heavy precipitation is needed to give the reserve soil moisture.

Preparations are under way for the annual convention of the Minnesota Beekeepers' Association which will be held at University Farm, November 16 and 17. A large attendance is indicated by the interest which the beekeepers are taking. In addition to speakers from within the state, Mr. L. T. Floyd, Provincial Apiarist of Manitoba, Canada, will take a prominent part on the program. Among other subjects, Mr. Floyd will discuss the place of package bees in northern beekeeping and new outlets for honey.

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Manitoba

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With National Honey Week drawing near, beekeepers in a number of towns of the state are making preparations to feature the product of their apiaries then. The idea of having a special time, like this, set apart to advertise honey is a real step in progress and should be continued each year.

The Home Economics Division of the North Dakota Agricultural College has prepared a bulletin showing how honey may be used to advantage in various forms of cookery. The bulletin is now in print but it is expected that a limited supply will be ready for distribution during Honey Week.

Progressive Officials in Another State Decide to Substitute Honey for Syrup in All State Institutions.

In a letter received a few days ago from the chief purchasing agent of the State Board of Administration is the statement that the Board intends in the future to buy honey, instead of syrups, for the various state institutions. This is very encouraging news.

It is planned to hold the annual meeting of the North Dakota Beekeepers' Association, January 21-22, at Fargo, in connection with Farmers' Week at the North Dakota Agricultural College. Beekeepers will find much of interest in the program being planned for this meeting.—J. A. Munro, Fargo, North Dakota.

Iowa The fall weather continued exceedingly favorable much later than is normally to be expected. This favorable weather allowed the bees to adjust themselves and to go into winter quarters very satisfactorily. It allowed packing to be completed before severe weather had set in. It is interesting to note that more producers are becoming interested in the problem of wintering each year and it is to be hoped that this number will continue to grow, for it is thought beyond dispute that the big problem in honey production in this state is that of reducing winter losses. There is a tendency on the part of a large number of producers to underrate the losses by poor wintering and to over-emphasize the losses caused by disease.

Some rather careful weights have been taken on a fairly large number of colonies, and the results indicate that good colonies well supplied for winter early in the fall lost quite heavily in a seven weeks' period. Eight to ten pounds loss for a good colony is really more than was anticipated. It shows why it is necessary to provide plenty of stores early in the fall if the colony is to winter successfully and be prepared to start the upgrade the following spring.

A great deal of interest was taken in the local support of the National Honey Week. Beekeepers in general were quite active in following up the national campaign with local co-operation. The Homemakers' Hour over WOI on Thursday, November 12, was devoted entirely to honey talks by Messrs. Paddock and Pellett. In this way the national broadcast by Betty Crocker was brought to the attention very timely to the radio listeners of Iowa.

Action was taken by the State Beekeepers' Association looking toward changes in the foul brood law with reference to the development of funds with which to carry on inspection work. It is to be hoped that these changes can be incorporated in the law at the next legislature which meets the coming winter. It has been exceedingly difficult to secure general appropriations for inspection work and the logical alternative is to secure local funds very largely from producers where they are interested in the clean-up of apiaries.—F. B. Paddock, Ames, Iowa.

Colorado It is not too early to prepare for the Christmas honey trade. Specially made Christmas labels on bottles and cans are not to be overlooked as a means for inspiring people to new thoughts for Santa Claus. Shoppers are constantly hunting new things and ideas for that occasion. Christmas trade in honey dollars means more to me than for any other month.

Here is a Quick, Sure Method for Losing a Honey Market; Also a Suggestion as to How to Hold a Market.

In northern Colorado we have just had an excellent demonstration of how to lose a honey market. Normally, this is the largest and most concentrated honey producing section of the state. This year's crop failure, combined with little or no holdover, left the markets bare of honey.

Here was an excellent opportunity for local beekeepers to buy some honey and make a little money on sales when little was in sight from production. This policy has been frequently advocated, from many sources for several months. The suggestion does not seem to have taken hold and this market has been taken by an outsider. An enterprising producer, from a more favored location, sensed the opportunity, loaded his truck, and is covering the territory to good advantage to himself and to the honey business in general.

Who will supply this market next year, the local beekeepers or the ambitious outsider? The producer from other parts is to be commended for his perception of the opportunity and for his effort. He has performed a service to the community which is hungry for honey, and he is being rewarded for his effort not only this year but perhaps for other years.

October and November have been unusually warm to this date. No killing frost occurred until about the first of the latter month. Days have been warm enough for free flights by the bees. It might be thought that stores would be reduced rapidly, but scale colonies do not indicate any appreciable weight loss. Apparently bees have been securing a little nectar from fall flowers, adequate for immediate needs. Brood-rearing during the late summer and early fall was below normal, due in part to the crowding of queens with honey in the brood nest. In most cases, colonies refused to place any honey in the supers, preferring to stock the brood-chamber for winter.

In less favored localities, stores are short and wintering prospects do not look bright. Some beekeepers are planning to winter their bees on present stores, feeding early in the spring as needed. While such plans are good, if carried out, we should not forget that there is at least one highway paved with just such good intentions.

Other producers are uniting up to 25 per cent of the weaker, ill-provisioned colonies with strong members, to save stores. It is planned to re-establish the number on early spring bloom by increase with the purchase of queens. It sounds like a good plan even in normal years when dandelion, willow and other early flora is plentiful. The writer is not unsupported in the belief that we have too many bees too early in the season in many parts of Colorado.—R. G. Richmond, Fort Collins, Colo.

Minnesota

Following a dry summer Minnesota had an unusually mild fall. There were enough occasional rains during September and October to keep the surface soil moist and bring out a good growth of white clover even in places where beekeepers had thought it had been killed out entirely by the hot dry weather of the summer. Prospects for next season so far as the condition of the honey plants is concerned at present are very much better than a few weeks ago. The late mild weather and the moisture have given opportunity for abundant growth. The sub-soil, however, is very dry, and heavy precipitation is needed to give the reserve soil moisture.

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it was made known that these meals cost only seven cents for food and two cents for service.

Further inquiries regarding the honey drew the comment that the men ate a lot of it the first day then scarcely touched it for a week, then came back to a more moderate use of it.

More Large Institutions Are Now Substituting Honey for Syrup Which is a Great Benefit to Honey Producers.

One of our directors, Dr. Thompson of Virden, made the discovery that the Indian Residential School at Elkhorn was using cane syrup in large quantities and he arranged a meeting with the buyer for this institution. When we met him, we learned that he also bought syrup for sixteen other similar schools scattered over western Canada and northern Ontario. He brought the matter before the executives of these institutions and they, too, announce their willingness to change to what now constitutes a cheaper and more healthful food.

An interesting development came out of the canvassing of institutions when the hospital authorities smiled at us and gave the information that they did not use these syrups, they had been using honey for years so no new business was available from that source.

The report on the 1931 honey crop shows a falling off in the aggregate of about three million pounds. The estimate for this year is as follows based on 2500 producers compared with 2800 last year, the difference representing the number that have dropped out in the past year.

Spring count of colonies	44,287
Extracted honey	7,166,000 lbs.
Comb honey	209,463 lbs.
Total lbs. honey	7,376,375 lbs.
Average per colony	166 lbs.

The beeswax situation is rather puzzling. Wax buyers are offering only fifteen cents a pound. Many reports of adulteration, far more than when wax was high in price are reported to this office.

A great interest in the manufacture of comb foundation is in evidence. Several foundation mills have been purchased and a number are trying their hand at the manufacture of foundation. This is new business for western Canada. Wax at fifteen cents and comb foundation at seventy cents seems to offer an explanation.—L. T. Floyd, Winnipeg, Manitoba.

Pennsylvania

Since my October notes were published, I have received letters asking for details regarding how to kill bees with gasoline. Since the method has some merit it may be well to tell about it here. About one pint of gasoline will quickly kill the bees in a two-story hive or in a big box hive. A little more will guarantee the job and will help to burn the combs. The gasoline may all be poured into the entrance, the hive having first been tilted back so that the liquid will run freely on the bottom-board. Quicker results may be obtained by pouring part of the gasoline into the entrance and quickly plugging it with a rag and then introducing the balance through the top of the hive. In case of a box hive there will usually be openings in the top. For modern hives a good way is to remove the cover before the colony is otherwise disturbed and place a cloth or gunny sack over the top of the hive so as to confine the bees to the hive. The gasoline is then poured over the cloth and the cover placed over all. About three to four minutes will do the work and the bees will not revive when exposed to fresh air.

The Local Demand Takes All the Buckwheat-Goldenrod Honey When the Honey Is Properly Advertised.

This fall found us with a satisfactory crop of dark amber honey gathered from buckwheat and goldenrod. As honey markets go, this honey is unknown. It can not be sold as buckwheat honey, and goldenrod honey is not supposed to be very good.

This buckwheat and goldenrod honey is liked by the consumers in localities where it is produced, and here is where it should be sold. This fall we conceived the idea of direct selling by using our local paper as the advertising medium. We have been advertising this honey in liquid form for 10 cents per pound, the customers to bring their own containers. It has worked well. The honey is nearly all sold at a price far above any wholesale price that might be expected, and the consumers have bought a good supply of good honey at a much lower price than usual. Both the producer and the consumer is benefited by this method of selling. The sales run from five pounds to sixty pounds per person, and we have no containers, labels or any other sales expense, except advertising and our time in dishing out the honey.—Geo. H. Rea, Reynoldsville, Pa.

Ontario Another month of unusually warm weather for this time of the year has passed by since my last notes were written. There has been but little rain locally, and conditions have been ideal for feeding the bees, where necessary, and getting them packed away for winter. Yesterday, November 9, a good flight was general. As all handling of the bees is over for the season, this thorough cleansing flight will put them in good condition to stand the winter that is sure to come, even though weather conditions all fall have been much like summer.

Colonies Are Believed to be Too Strong for Best Wintering in One Locality while Not Strong Enough in Another.

While there is no doubt that the word "locality" is a much abused term, yet comparatively short distances often make a vast difference in methods of management, size of crop secured, and quality of the honey. My attention was forcibly brought to this matter again quite recently on reading an article by one of our well known Ontario beekeepers. He stated that he had been allowing some of his apiaries to clean out partly filled supers daily, and said that in these apiaries the colonies were much stronger for winter than in others that did not get any honey during the same period.

Here in our locality the problem is not how to get bees strong enough for winter; on the other hand I would gladly have given away a thousand pounds of bees, more or less, in September, provided that only those bees that were not needed could have been taken. But I expect the conditions I would have to impose would be about as hard as those given to Shylock when given permission to take his pound of flesh, so it is not likely that our over-populated hives stand much chance of being relieved of their surplus population.

So we have in Ontario some beekeepers using means and methods to increase the population of their colonies for winter while others, like myself, would gladly give them the bees they need if such a thing was possible.

Why such a difference in locality in the same province? In the one locality after the clover flow is over there is practically no bee forage for the remainder of the season, consequently brood-rearing slacks up quite early and the death rate soon is greater than the birth rate. Only one thing can happen when such is the case whether it be among bees, animals or humans—a shrinkage in population.

Here in our locality as well as in many others, we have a steady flow (not by any means always a heavy one) right through the whole month of August. The result is that colonies increase in population instead of decrease. This is particularly true if young queens are at the head of the colonies by the first of August or late July.

As many know, we use single brood-chambers for wintering. Notwithstanding the fact that many good beekeepers use two instead of one, I am by no means convinced as yet that two stories for wintering are as good as one, let alone the claim that they are better.

Many colonies this fall after being fed and packed for winter (some before they were packed) had large clusters of bees over the fronts of the hives. After an experience of quite a few years in wintering hundreds of colonies, I feel sure that, one year with another, colonies with a moderate size cluster winter much better than the abnormally large clusters.

Judging from information from about all available sources, there seems to be little change for the good in the honey market. During the past ten days, wheat has been making nice advances and business sentiment in general appears to be much brighter than it has been. Whether this will eventually help out in the honey market is a question, but it seems reasonable at least to hope for such a result.

As mentioned in a former issue of this journal, our local sales have been very heavy and all honey put up in small containers was sold some time ago. We have been liquefying honey that we have in sixties to put into smaller containers, and we now regret that more was not so put up at the time the crop was being cared for. As it was, over 35 per cent more was put into pails than in other years, but sales at a roadside booth exceeded our expectations and we were soon sold out. But moving car lots is a more serious proposition and it is hard to close deals for such large amounts at a price that is at all remunerative. However, surprises are always in order in beekeeping, so possibly by next issue I may be able to report that honey has followed the example of wheat and has gone up 30 per cent in ten days.—J. L. Byer, Markham, Ont.

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Heads of Grain from Different Fields

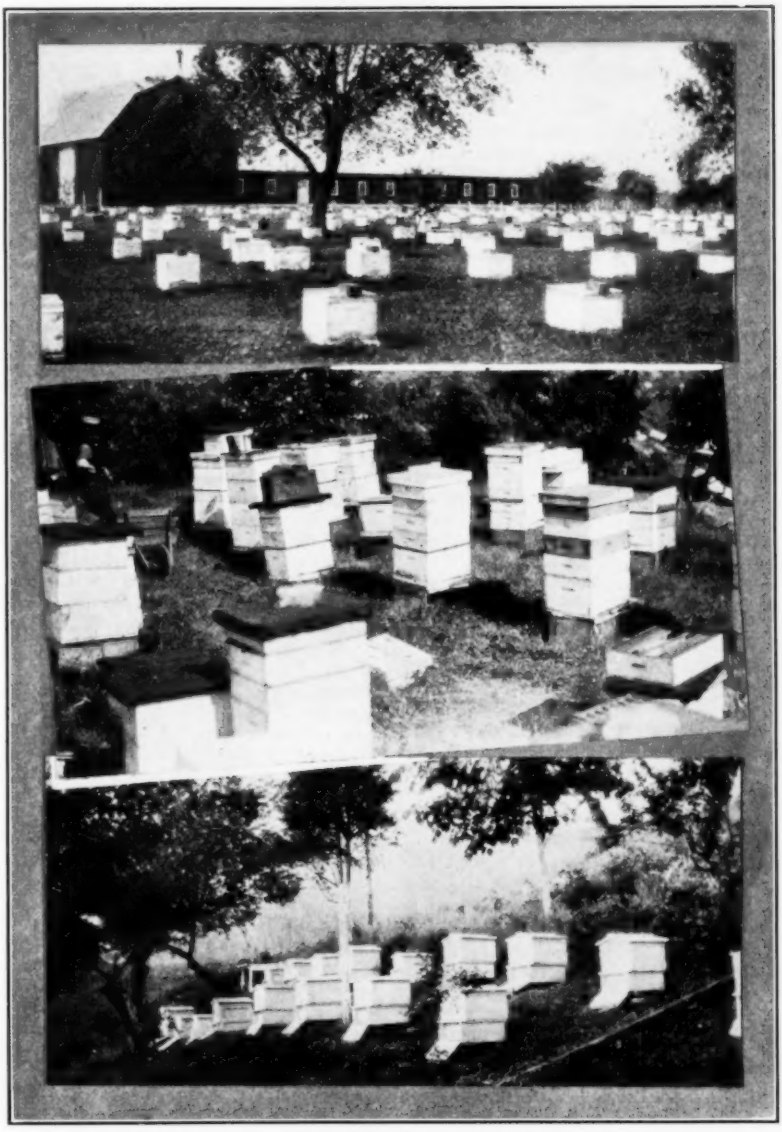
Removing Bees from Buildings Beekeepers who can spare a little time now and then can do well by themselves and others by removing bees from buildings where they are usually a nuisance and a menace if they should have American foul brood. The owner is often willing to pay for having the bees taken out or killed. In the spring I try to save the bees and brood to put over some weak colony with a queen excluder between. When the brood has emerged the comb can be taken away and melted. In the fall I kill the bees with calcium cyanide, then remove the honey. It is best to start early in morning before any bees get out. I charge about $1.00 per hour and it takes two to three hours. I sometimes take the honey for my pay, quite often getting over 100 pounds, which is not bad for two or three hours work.—Benj. Nielsen, Aurora, Nebraska.

Bees Winter Well Under Snow Here is a picture of a snow bank that drifted over my 20 colonies of bees three years ago. I did not lose a single colony. I have a ⅝-inch hole about half way up on the front of each hive to prevent smothering. I think that was salvation for the bees under the snow. I can't begin to explain my thoughts when I dug down in that snow bank about six weeks after and found a tunnel the full length of the row of hives. The tunnel had been formed by the heat from the bees. How cozy they were down there! They consumed the least honey I ever had them consume during winter.—L. Vanderbilt, Decorah, Iowa.

Simplified Winter Packing I winter my bees in single-walled hives each supplied with a food-chamber on top, either shallow or full depth. I take off the telescope cover but leave the inner cover on with the hole for bee-escape open. I throw one or two burlap bags over the top, wrap the whole hive with newspaper, then wrap it with single-ply tarred paper. I reduce the entrance to about four inches with a metal strip to keep out mice. I have never had a moldy comb in the spring, and when I take the packing off about May 1, the bees are strong. The tarred paper keeps the hives warm and stops all wind from entering. I place the telescopic covers on top of the tarred paper, and put stones on top. For the climate in which I live, this way of packing has worked for me with no losses if the bees go into winter quarters with good queen, no disease, and plenty of stores.—O. N. Whitehead, Wallingford, Conn.

[There are so many variable factors affecting bees in winter, such as the depth of snow, quality of stores, number and age of bees, etc., that it is difficult to determine the effect of different thickness of packing.—Editor.]

This large snowdrift covering the apiary affords excellent protection during coldest portion of winter.



APIARIES IN CLOVER REGION

Upper—Apiary of A. L. Beaudin, St. Chrysostome, Province of Quebec, Canada. Middle—Samuel Cushman's apiary in the city of Chicago, Ill. Lower—Kinkade & Son's apiary, Sycamore Valley, Ohio.

Just News

Editors

The North Dakota Beekeepers' Association will hold its winter meeting at Fargo, January 21-22.

The annual meeting of the American Honey Producers' League is scheduled for January 26-28, 1932, at Columbus, Ohio.

The annual meeting of the Southern States Beekeeping Conference will be held at St. Petersburg, Florida, February 5 and 6.

Purdue University, Lafayette, Indiana, will offer a short course in beekeeping January 12-14. Information concerning this short course may be had by writing to Prof. J. J. Davis, Purdue University, Lafayette, Ind.

The annual convention of the Utah State Beekeepers' Association will be held in Ogden during the Ogden Livestock Show, January 8-14. The beekeepers' convention will probably be on January 11-12. Mr. T. L. Ball, Ogden, is president, and C. R. Baird, Provo, secretary of this association.

As announced in these columns last month, the Indiana Beekeepers' Association will hold its annual meeting in the State House, in Indianapolis, December 3 and 4, and the Wisconsin Beekeepers' Association will meet in Milwaukee on the same dates.

The University of California has recently published Bulletin 517 entitled "Nectar and Pollen Plants of California," by Prof. G. H. Vansell. The list of plants is arranged in alphabetical order with a brief discussion of each plant. It is interspersed with illustrations of the plants and maps showing where they grow.

A new bulletin entitled "Honey Cookery," by Constance Leeby, was published recently by the Agricultural Extension Division of the North Dakota Agricultural College, Fargo, N. D. The bulletin contains a discussion of honey as a food, together with a number of tested recipes having honey as one of the ingredients.

On account of the poor honey crop in Germany, importers are agitating a lowering of the tariff on imported honey from the present rate of about 7 cents a pound gross (equivalent to about 8½ cents net) to the old rate of about 4.3 cents per pound net. This is strongly opposed by the Beekeepers' Union, which is asking for an increase in the tariff instead of a decrease.

R. A. Morgan, well-known beekeeper of South Dakota, died on October 18, age 76 years. Mr. Morgan's name has often been mentioned in connection with record yields of honey. In 1925 his record was 616 pounds, and in 1928, 803 pounds from a single colony, spring count. His brother, Dr. E. A. Morgan, Fountain City, Wisconsin, also a beekeeper, was often mentioned years ago in beekeeping literature as "The A B C scholar who grew so fast."

The list of individuals and firms that have agreed to accept honey donated to the American Honey Institute has been augmented by additional names. The list now stands as follows: Allen Latham, Norwichtown, Conn.; Bee-Kist Products, Inc., 8272 Jefferson Street, Phoenix, Ariz.; A. G. Woodman Company, Grand Rapids, Mich.; Dadant & Sons, Hamilton, Ill.; James Gwin, Department of Markets, Madison, Wis.; Lothrop Nursery Company, Aberdeen, S. D.; T. W. Burleson, Waxahachie, Texas; O. S. Bare, Extension Entomologist, College of Agriculture, Lincoln, Neb.; Sioux Honey Association, Sioux City, Iowa; H. M. Krebs, Sacramento, Calif; George C. Barton, Meriden, N. H.; Colorado Honey Producers' Association, Denver, Colo.

Prof. Dr. G. A. Rosch, Professor of Beekeeping in Landwirtschaftliche Hochschule, Stuttgart, Germany, has returned to Germany after having spent several months in this country studying American beekeeping methods. Dr. Rosch studied under the celebrated German biologist, Prof. Dr. Karl von Frisch, specializing in beekeeping. He was accompanied on his visit to the United States by Bernhard Graze, whose father, Chr. Graze, is a manufacturer of beekeepers' supplies at Stuttgart, Germany. Mr. Graze is still in this country spending some time in The A. I. Root Company's plant at Medina to study American manufacturing methods.

Bees, Men and Things

(You may find it here)

"I have just finished making 60 gallons of apple butter with the old copper kettle. I sweetened 10 gallons of it with honey 70 per cent and sugar 30 per cent. I have always liked apple butter, but this is the best yet."—Wesley W. Osborn, Montgomery County, Ill.

"I am writing just to send greetings to your readers from this side of the water. I have read Gleanings in Bee Culture for some years past and wish it every success for the future. All my bees are in Langstroth hives and all are very strong."—Francis W. Judge, England.

"I was much interested in the article by my neighbor, Mrs. Louise MacMullen, in the October issue of Gleanings in Bee Culture. I have long thought that the tall honey jars are most awkward, and I do hope that some manufacturer will see the logic and force of Mrs. MacMullen's article and the merits of such a non-drip spout top."—A. V. Harrington, Brevard County, Fla.

"Our only sources of surplus honey in this locality are poplar and basswood. The honey from both these sources is exceptionally fine, but we feel that there is no better honey anywhere than that from basswood. I have already sold more than 1000 pounds this year at prices ranging from 25 cents to 35 cents per section."—J. P. Cook, Wyoming County, W. Va.

"I am much interested in the method of wintering given by Jay Smith in the September issue of Gleanings in Bee Culture. I am trying it on a small scale. I have been working on something of that sort, but think that his method is more promising than mine. We have had the best crop of honey this year since 1920, but poor marketing."—Robert S. Benson, Oxford County, Maine.

"In my article in the November issue I am made to say that Dr. Means told about delicious jelly made from orange honey and citrus pectin. My copy reads, 'the writer had samples and told of a delicious jelly made from orange honey and citrus pectin.' Not that it makes any material difference, but Mr. Means had made jelly from certo which I do not think compares with that made from citrus pectin."—L. L. Andrews, Riverside County, Calif.

"This has been a lean year in this part of the South with the fellow who keeps bees as well as those who farm. I operate 30 colonies as a side line, mostly for extracted honey. I usually get a ton of honey from 25 to 30 colonies, but this year I got only 1200 pounds. I believe that with proper swarm control together with good, prolific queens, anyone could average 100 pounds per colony each year."—Charles Whatley, Randolph County, Ga.

"During the last few weeks, forest fires have destroyed all the gallberry and various other honey-producing plants over an area of several hundred square miles in the eastern section of North Carolina. Several leading beekeepers are located in counties where the fire is still spreading. Some of them may find it necessary to seek new locations for their apiaries. On account of these fires, honey production will be greatly reduced next year and may be a failure in many localities in the eastern counties."—C. L. Sams, Wake County, N. C.

"November 6 has always been the date for carrying my bees into the cellar or packing them outside. This season we had two weeks of cloudy cold weather and rain in October, so that the bees formed their winter cluster the last of October. By November 1 it turned warm and the thermometer goes up to 70 degrees every day. Dandelions came out in full bloom and for the past three day (this is November 8) bees have been carrying in pollen in large amounts. This has never happened before in the 53 years that I have kept bees."—Dr. E. A. Morgan, Buffalo County, Calif.

"My bees gathered nectar from fireweed at a distance of seven miles. I noticed that they were going south so I took along a glass and followed them. I went on until I came to an old burning seven miles away. All the way out, there was nothing but green timber until I got into the old burning. There, for miles and miles, there was nothing but fireweed. I harvested 3400 pounds all told from 20 colonies, spring count. This was a great year for bees and honey with me. We have had lots of rain this fall which will put the honey plants in good condition for next year, provided we get a little snow to hold the moisture until the fruit starts next year."—R. A. Williams, Ashland County, Wisconsin.

Food Department

Malitta D. Fischer

Honey, Plain or Otherwise, Makes Welcome Christmas Gifts

Christmas and New Year's—eight days of holiday atmosphere! That's what makes this particular season of the year the hospitality season and the one we anticipate with so much pleasure. Most of us are very happy during the holiday season—sometimes we are happy because our Christmas tree is full of gifts, sometimes because we find new hope and cheer in the beginning of a New Year, which always follows Christmas, sometimes we are happy just thinking of the many happy Christmases past. But those who are happiest are those who give for they rejoice over the delight of the receiver.

There are those, I know, who are glad to see Christmas pass. They think of it in terms of cash expenditures only, a lot of bills to be paid. Christmas should not be a burden financially, physically or mentally. One should not have to spend a great deal for gifts—the amount of that "great deal" is, of course, determined by one's own particular pocketbook. One should not have to work and work and work, trying to get Christmas food and confections ready. Such preparation can be done over a period of time and in such a way that it is fun. One should not find it a burden planning for Christmas and become mentally exhausted before the actual realization of the yuletide festival takes place. Such is not the true spirit of Christmas. Unless we find real pleasure in purchasing this and that, unless it is fun to make this cake, this batch of cookies, and that fine pan of candy, unless we actually feel a happiness of mind in our Christmas plans, we do not experience the real significance of Christmas.

So many times we forget that homemade gifts are the most appreciated. Things that we work with frequently seem commonplace to us. We forgot that to our friends such gifts would be treasures.

Why Honey Makes Ideal Gift

Take beekeepers and their wives and families, for instance. Honey seems very ordinary to most of them. They never think of giving it for Christmas gifts. Little jars of honey to the children, combs of honey to the grown-ups, pails of honey to the poor, combination packages of honey cakes, cookies and candies with jars of honey to some distant relative or friend—these seem too ordinary. And yet the very fact that honey is ordinary to the beekeeper makes it just that much more extraordinary to most of his friends. Young or old are equally thrilled with honey or honey goods as Christmas gifts.

During the holiday season unexpected friends are likely to drop in for an afternoon or evening. One can never have too many Christmas goodies on hand. Many of your friends have been so busy that they have not a supply of cakes, cookies and candies on hand. True they can buy them, but don't they always enjoy the good home-made kind more? Those are the kind of folks to whom you should send your honey-made cakes and cookies.

"It's so much work at the last minute," I hear some of you say. With sugar it would be but with honey it is not for there are so many kinds of honey cookies, honey cakes and honey candies that improve on standing that they can be made ahead of time, thereby avoiding the last minute crowding of the last few days which are always busy ones.

Your own cookie jar too should be well filled with honey cookies. There should be a great variety for its a thrill to anyone to look over a large plate or tray of many different types of cookies and wonder which one to take. So it is in the metal boxes of cookies you pack for gifts. Lithographed boxes filled with many varieties of honey cookies satisfy the tastes of young, middle-aged and even older receivers.

Christmas Cookies Made With Honey

Here are a few recipes for cakes and cookies and candies. All have unusual keeping qualities. Arrange them in boxes and be sure to include some little two-ounce jars of honey. And don't forget that attractive wrappings will carry to the receiver the true spirit of the giver. Cellophone is always an additional feature in festive wrappings. On the youngster's package, borders of ducks, chicks and other animals as well as reindeers and Santa Claus cut out of different colored paper and pasted on are especially pleasing.

Honey Nutlets (this recipe is one of Betty Crocker's favorites and I give it to you as it comes from her own Gold Medal Kitchen-Tested Laboratory). 1 cup shortening, 1 cup honey, 1 cup brown sugar, 4 cups Gold Medal Kitchen-tested flour, 1 egg, ½ teaspoonful soda, 1 teaspoon salt, 1 teaspoon cinnamon, 2 cups nuts. Melt shortening, add honey and mix well. Add sugar and beaten egg and mix well. Sift flour once before measuring. Sift flour, soda, salt and cinnamon together and add to the creamed mixture. Add the nuts. Drop by small spoonfuls on greased cooky sheet and bake. Place in an air-tight container for a week or two before using. Time: Bake 15 minutes. Temperature: 350° F. moderate oven. Amount, 4 to 5 dozen.

Honey Nut Bars (this one is used by Eleanor Ahern, Home Economics Director, Proctor & Gamble, in her "Tree Trimming Party.") ½ cup Crisco, 1 cup powdered sugar, 1 egg beaten, ½ cup strained honey, 2 cups flour, 2 teaspoons baking powder, 1 teaspoon salt, ¼ teaspoon almond extract, ½ teaspoon vanilla, ½ cup chopped walnuts. Cream Crisco and sugar, add egg, then honey and extracts. Stir in walnuts, then flour sifted with salt and baking powder. Cover and let stand in ice box over night. In the morning divide into two or three parts. Roll thin to size of shallow pans. Spread over bottom of the Crisco pans, spreading evenly into corners with fingers. Beat white of one egg slightly with two teaspoons cold water. Brush the top with the egg, then sprinkle with granulated sugar and chopped walnuts. Bake in moderate oven (350° F.) about 15 minutes. While still warm cut in bars or squares any size you like.

Honey Spice Cake (This is one of Eleanor Howe's Favorites. Miss Howe is Home Economics Director for McCormick & Company, Baltimore, Maryland.) 1 cup shortening, ½ cup sugar, ¾ cup strained honey, 2 eggs, 3 cups flour, 4 teaspoons baking powder, ½ teaspoon soda, ½ teaspoon salt, 1½ teaspoons Bee Brand cinnamon, ½ teaspoon Bee Brand cloves, ½ teaspoon Bee Brand nutmeg, 1-cup sour milk, 1 teaspoon Bee Brand vanilla extract, ½ cup nut meats (broken). Cream shortening and add the sugar. Beat in the honey. Beat yolks of eggs and add. Sift dry ingredients. Add ¼ cup to nuts and add. Add the rest alternately with sour milk and Bee Brand vanilla extract. Fold in the beaten whites. Bake in a well greased loaf pan in a moderate oven (350° F.) for 45 to 50 minutes.

Honey Krisp Cookie (This is a favorite of Mr. W. K. Kellogg and I know beekeepers will enjoy it.) ½ cup shortening, ½ cup honey, 2 eggs, ½ cup sour cream, 1¾ cups flour, 1 teaspoon baking powder, ¼ teaspoon salt, ½ teaspoon soda, ½ cup chopped dates, ½ cup nut meats, 1 cup Kellogg's Rice Krispies, nutmeg or vanilla flavoring. Cream shortening and honey. Add well-beaten eggs and sour cream. Sift the flour with baking powder, salt, soda, and add to first mixture. Stir in dates, nuts and Rice Krispies. Add flavoring. Drop with dessert spoon on buttered pan about three inches apart. Bake in moderate oven 375° F. for twenty-five minutes. Makes 24 cookies about 2½ inches in diameter.

And here are a few holiday honey recipes from my own kitchen.

Honey Chocolate Sticks—½ cup cocoa, ½ cup honey, ¼ cup brown sugar, ½ cup shortening, ½ cup nut meats, 1 cup chopped dates, ¼ teaspoon soda, 1 egg, ¼ teaspoon salt, ¼ cup sour cream, 2 cups flour, 1 teaspoon baking powder. (All honey may be used if sticks are aged 2 weeks before serving.) Blend honey and brown sugar. Cream with shortening. Add egg, then sour cream. Then sifted dry ingredients, reserving 3 tablespoons of the flour which should be mixed through the dates and nuts. Last of all add the floured dates and nuts. Spread batter to about ½ inch depth in flat pan and bake in moderate oven about 35 minutes. Before entirely cool, cut in sticks about 2½ inches long and ¾ to 1 inch wide. Roll in powdered sugar. If mixture is aged, wrap the slabs in waxed paper and put in a jar. Cut as used.

Honey Christmas Bread (These are very rich but make a delicious addition to your tray of assorted Christmas cookies.) ½ cup shortening, ¼ cup honey, 1 cup flour. Half butter and half Crisco is a fine combination to use as shortening. Work until well softened, adding honey and creaming well. Be sure mixture is well blended. Add the flour and mix thoroughly. Spread out over well greased square or oblong cake tin to less than ¼ inch depth. Bake in medium hot oven (375° F.) for about 20 minutes. Cut in small oblong pieces while still warm. The honey bread pieces may be decorated with cherries, citron, candied fruit or Christmas candies to make them more colorful.

Honey Cocoanut Cakes—¼ cup brown sugar ½ cup flour, ¼ cup honey, 1 egg white, 1½ cup cocoanut. Mix together brown sugar and flour. Add cocoanut, then honey. Lastly the egg white stiffly beaten. Shape into round balls and arrange in greased pan, flattening out the balls to form little flat cakes. Bake at 400° F. (hot oven) for about ten minutes.

German Cookies—2 eggs, juice of lemon, 2 cups honey, 1 cup brown sugar, 4 cups flour, 1 teaspoon soda, 1 teaspoon cloves, 1 teaspoon nutmeg, 1 teaspoon cinnamon, ½ teaspoon salt, ¼ pound sliced candied citron, ¼ pound of almonds. Add the beaten eggs and lemon juice to honey. Add brown sugar. Sift dry ingredients and add sliced citron and chopped nuts to dry ingredients. Then mix dry ingredients with honey mixture. One can never say exactly how much flour to use, so, unless the dough is very stiff, add more flour. Let stand one or two nights in refrigerator. Roll and cut into fancy shapes, decorate with candied peel, candies or blanched almonds. Bake in a hot oven (425°) for about 15 minutes. Keep in tightly covered box.

And what would Christmas be without candies—all types of candies made with honey. If you clipped those from last December's Gleanings, you will have some of the best ones we have been able to work out for the home-maker. Here are just a few additions.

Honey Toffee—4 ounces sugar, 4 ounces honey, 2 ounces butter. Melt the honey and sugar together in pan, cook slowly for fifteen minutes. Then add the butter and cook another five minutes. Try about ten drops of toffee in cup of cold water and if it sets, it is done. Turn into a lightly buttered tin pie plate, scattering nuts over the top. Let set. Break into small pieces by hitting plate on the bottom.

Honey Caramels—2 cups honey, few grains salt, 2 cups granulated sugar, 2 cups evaporated milk, ½ cup butter, 1 teaspoon vanilla. Choose a heavy iron, aluminum or copper kettle for cooking. Stirring occasionally, boil sugar, salt and honey to 245° F. Add butter and milk gradually so that the mixture does not stop boiling at any time. Cook rapidly to firm ball stage (256° F.) Stir constantly because the mixture becomes very thick and sticks easily at the last. Add vanilla and pour into a buttered pan. Cool thoroughly before cutting. Cut with a heavy, sharp knife, using a saw-like motion. About 2 pounds of caramels.

So many times we forget to bring in plenty of fruits and vegetables in our holiday menus. Here is a Christmas salad with lots of flavor and vitamines, too.

Christmas Salad—1 envelope Knox's gelatine, ½ cup cold water, ½ cup lemon juice, 2

(Continued on page 796.)

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Gleaned by Asking

Geo. S. Demuth

Location of Winter Cluster

Question.—How can colonies kept in two stories the year round be manipulated to induce the bees to form their winter cluster near the bottom of the hive instead of in the middle or near the top?—Thomas Brayton, Michigan.

Answer.—The location of the winter cluster is determined to a large extent by the amount of honey in the hive. If the upper story is entirely filled with honey and there is some honey in the upper portion of the combs in the lower story, the cluster will be formed in the lower chamber in the fall and move upward as the honey is consumed during the winter and spring. In hives well provisioned with honey, the cluster is usually located toward the front near the entrance in the fall. This is because the empty cells are in that part of the hive when the cluster is formed, the upper and back portions of the comb being filled with honey. Of course, strong colonies in well protected hives form loose clusters which nearly or quite fill the hive even in cold weather, thus enveloping a large amount of honey. Smaller colonies that are poorly protected, form a small, compact cluster, the margin of which may envelop only a small amount of honey.

Uses of Beeswax

Question.—I would like to have a list of the different uses of beeswax, and wonder if you can help me out.—R. H. Walstrom, Nebraska.

Answer.—Beeswax is used for such a wide variety of purposes that no available list is complete. The enormous increase in the consumption of beeswax in the United States during recent years suggests that it must have many new uses recently developed and not generally known. Beeswax is used in the manufacture of candles, for insulating wires and coils in electrical apparatus, for making floor polish, furniture polish, shoe polish, leather dressing, dental wax, wax flowers and various wax figures, salves, ointments, various cosmetics. It is used for electrotyping, for etching on glass, for making various kinds of cement, for waxing thread, for lubricating nails for driving into hard wood, as in making furniture, for making foundry fillets for patterns, for making grafting wax, comb foundation, and various other goods. The amount used annually for making comb foundation in this country is apparently less than one-twelfth of the total amount consumed.

Many Drones Late in Season

Question.—One of my colonies developed a large number of drones in September. Is this a natural thing for them to do at this season, or is something wrong?—M. V. Bryant, New York.

Answer.—As a rule, there are but few if any drones in normal colonies at this season. There are exceptions to this in the case of queenless colonies, colonies that are superseding their queens late in the season, and in exceptional locations and seasons when there is a heavy fall honey flow making the bees unusually prosperous for that time of year. The presence of many drones in September suggests that the colony may have either a failing queen that has become a drone layer, or that it is hopelessly queenless and some of the worker bees have taken on the function of laying eggs. In either case, only drones result from the eggs that are laid. Such colonies are of little value at this season, the remaining workers being too old to survive the winter. Such colonies usually die early in the winter.

Cream of Honey

Question.—How can honey be whipped into a cream or put into any other form besides its natural state?—E. Lynn Woodin, District of Columbia.

Answer.—When extracted honey becomes cloudy in appearance indicating that it is beginning to granulate, it can be made to granulate with very fine crystals, thus giving it a creamy appearance. This is done by stirring it thoroughly every day or two until it becomes white and creamy. Another way is to permit the honey to granulate in the ordinary way, then run it through a small grinder such as those used for grinding wheat in the home. This crushes the crystals, making them fine, which gives the honey a creamy appearance. The flavor of honey treated in this way is thought by some to be even more pleasing than the same honey in liquid form.

Comb Honey or Extracted Honey

Question.—Which is more profitable to produce, comb honey or extracted honey?—Nolan Omer, Pennsylvania.

Answer.—This depends largely upon the available market, the quality of the honey, the character of the honey flow whether slow or rapid, and the skill of the beekeeper. Other things being equal, a larger income can usually be obtained by producing comb honey when operating not more than 100 to 200 colonies of bees.

When a large number of colonies are operated, making it necessary to employ help, most beekeepers find extracted honey more profitable under present conditions. This is because the production of comb honey usually requires closer attention to details and more frequent visits to the apiary than the production of extracted honey. In other words, if one's time is not fully employed, it is usually more profitable to produce comb honey.

Worker Bees Lay Eggs

Question.—We have had some discussion as to whether or not worker bees ever lay eggs. Please give correct information in regard to this.—Jewell McClurg, Oklahoma.

Answer.—Worker bees some times lay eggs. This occurs when the colony has in some way become queenless and has no eggs nor larvae from which to rear another queen. After the bees have been hopelessly queenless for some time, some of the workers of the hive take upon themselves the function of laying eggs. However, since these are unfertile eggs, they develop into drones only. This peculiar phenomenon of unfertilized eggs hatching and developing is known as parthenogenesis.

Queen-excluder Under Food-chamber

Question.—Will it be all right to leave the queen-excluder between the food-chamber and the brood-chamber all winter? I do not want the queen to lay in the food-chamber next spring.—S. J. Byler, Pennsylvania.

Answer.—Most beekeepers prefer to remove the queen-excluder for winter. The metal of the excluder would no doubt cause the loss of some heat from the cluster if the bees are clustered against both sides of the excluder in winter. Again, if a full-depth food-chamber is used that is not entirely filled with honey in the fall and the colony is weak, the cluster might move into the upper story leaving the queen below where she would perish. Most beekeepers who use the food-chamber permit the queen to have the run of both stories during the building-up period in the spring, then confine her to the lower story at about the beginning of the main honey flow. This procedure greatly discourages swarming and usually results in strong colonies for the honey flow.

Nectar Secretion in Basswood

Question.—Does heavy lightning and thunder affect the secretion of nectar in basswood when it is in bloom, or just coming into bloom? Also does a heavy shower stop the secretion of nectar in basswood?—Wm. Hofferbert, Minnesota.

Answer.—Under some conditions, the secretion of nectar in basswood blossoms appears to be quite sensitive to atmospheric changes, while under other conditions it continues to yield regardless of changes in atmospheric conditions. When a thunder shower or a period of rain is followed by northwest winds and lower temperature, nectar secretion in basswood blossoms often becomes meager or ceases altogether, but if the weather continues warm after a shower, basswood usually continues to yield. So far as is known, lightning does not affect nectar secretion in basswood.

Thickness of Packing for Cold Climate

Question.—How many inches of packing would I need to winter my bees outside in packing cases where the temperature some times goes to 40 degrees below zero?—E. R. Thayer, Minnesota.

Answer.—Beekeepers are not generally agreed upon the amount of packing necessary for different degrees of weather severity. So many other factors affect the welfare of the bees during the winter that it is difficult to determine the effect of the thickness of packing around the hive. For instance, in localities where the snow is usually deep covering the hive completely with several feet of porous snow, the bees could winter well in single-walled hives, the effect of the snow being equivalent to heavy packing. On the other hand, colonies in hives surrounded by eight or ten inches of packing exposed to strong, cold winds without any snow would be inadequately protected. In localities where the sun shines practically every day during the winter, the hives would take less packing than in localities where cloudy days prevail during most of the winter. By providing protection from the wind, you should be able to winter your colonies successfully in your locality by providing four to six inches of packing around the hive. In a windy location more packing would no doubt be necessary.

Liquefying and Packing Honey on a Small Scale

Question.—Since I can not dispose of all of my crop of honey before it granulates, I wish that you would give me a good plan for heating honey for small production.—E. C. Hamler, Kansas.

Answer.—A large wash boiler or a tank made of galvanized iron can be used for heating honey in 60-lb. cans. A rack should be placed on the bottom of the boiler or tank so that water will circulate under the cans. Water can then be filled in almost to the top of the can, then by heating the water, the honey can be liquefied and heated for bottling or pouring into cans for retail trade without scorching. If the honey is to be heated to 160 degrees or more to prevent early granulation, it is well to stir the honey while heating to prevent the outer portion being discolored

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by overheating. This can best be done in open vessels, which would require pouring the honey into such vessels after it has been liquefied. When the entire mass of honey has been heated to the required temperature, it can be poured into the honey tank through two thicknesses of cheesecloth to strain out any particles of foreign matter that may be in the honey. It is then ready to be drawn off through the honey gate into bottles or pails.

Moisture Condenses Within Hive

Question.—What is wrong with the winter arrangement when drops of water appear within the hive and it becomes damp with moisture? Can this condition be eliminated in outdoor wintering?—L. H. Wagner, New York.

Answer.—This moisture is from the breath of the bees. When the interior of the hive becomes wet during winter, it indicates that the bees are too active because of insufficient protection or because the stores are not of good quality, causing the bees to become restless; that the protection is not sufficient for the climate; or that the climate is too damp for the elimination of moisture in vapor form through the entrance by diffusion. If the condition is brought on by abnormal activity on account of poor stores, the remedy is frequent cleansing flights, which are usually not possible in your locality. Increasing the thickness of packing decreases the condensation of moisture within the hive. In very cold climates or in damp climates, it may be necessary to provide a porous covering by removing the regular cover, covering the top of the hive with pieces of old carpet and placing above this eight or ten inches of porous packing material. This allows moisture to escape upward through the packing material.

Washing Screw-top Cans

Question.—How can 60-lb. honey cans be cleaned so they will not rust?—Philip Dales, Kansas.

Answer.—The honey remaining on the inside of the cans can easily be washed off by pouring hot water into the cans, putting the cap in place but not screwing it down tight, then, using a large cloth to prevent burning the hands, shaking the can vigorously so that the water splashes against the entire inner surface. The difficulty comes in drying the cans so they will not rust. This can be done by placing them in an oven or standing them on a steam or hot-water radiator with the caps off so the vapor can escape from the interior of the can. If facilities do not permit proper drying, it is advisable not to wash the cans until they are to be refilled the next season. However, if the cans are to remain standing for many months without being washed, the honey sometimes acts upon the tin, forming a black film and corroding the tin.

Upper Opening in Hive for Winter

Question.—Would an opening about two inches below the top of the hive be a good thing for winter by keeping the hive dry?—Armand Chenuz, British Columbia.

Answer.—Some beekeepers provide an opening in the hive above the regular entrance. In double-walled hives this is usually made by inserting a tube about three-fourths of an inch in diameter through the inner and outer walls and the packing. If both an upper and a lower entrance are left open during the winter, the warmer air within the hive will bring about a circulation of air into the lower entrance and out at the upper, thus carrying away heat generated by the bees. To prevent this, the lower entrance should be closed during the coldest part of winter. The advantages claimed for such openings in the hive are that there is less trouble from condensation of moisture within the hive, and the entrance can not be clogged by dead bees since the opening is some distance above the bottom-board.

Net Weight Marked on Comb Honey

Question.—If I ship comb honey into another state, must I stamp the net weight on the sections or does the buyer do this?—John J. Sueper, Nebraska.

Answer.—When comb honey is shipped across a state line, therefore, in interstate commerce, the federal regulations require that the net weight be stamped on the sections. However, honey is sometimes shipped to a dealer who re-grades it before turning it over to the jobbers or retailers in which case the large buyer stamps the net weight on the sections. In all cases, when honey in interstate commerce goes to retailers, the regulations require that the net weight be stamped on the sections. Most of the states have a similar regulation for honey sold within the state in which it was produced. In determining the net weight, about one ounce must be subtracted from the gross weight to allow for the weight of the box. Sections are usually graded so that those in a case have approximately the same weight, and all are stamped the same. Most comb honey going through regular trade channels is marked "net weight not less than 12 oz." for fancy; "not less than 11 oz." for No. 1 and "not less than 10 oz." for No. 2.

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"We do not guarantee the reliability of honey sellers, although we require strict references from them."—From Our Guarantee and Advertising Conditions.

WHITE clover honey, 6½c. Sturdevant, St. Paul, Nebr.

CLOVER honey in new 60-lb. can. Wells B. Crane, McComb, Ohio.

NEW crop honey in new 60's. D. R. Townsend, Northstar, Mich.

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CHOICE clover honey, in 5-lb. pails, 60-lb. cans. C. J. Baldridge, Kendaia, N. Y.

NEW crop of clover honey at 7½c; ton lots, 7c; amber, 6c. Walter Rink, Port Hope, Mich.

FOR SALE—White clover honey in 60-lb. cans, 7c per lb. Jos. H. Hoehn, Ottoville, Ohio.

FINEST choice comb and extracted honey. Prices on request. Roy C. Stoller, Latty, Ohio.

CLOVER honey, extracted, quality guaranteed, price right. Busick Bros., Grover Hill, Ohio.

WHITE clover extracted honey. Write for prices and sample. Kalona Honey Co., Kalona, Iowa.

HONEY—OUR FINEST white clover, 60-lb. can, $4.50; 120 lbs., $8.50. J. G. Burtis, Maricetta, N. Y.

FOR SALE—Clover, basswood, fireweed and fall honeys in sixties or pails. C. S. Watts, Exeland, Wis.

1931 white clover comb honey for sale. Very nice. Write for prices. Albert Borning, Interlaken, New York.

FOR SALE—Extra choice white clover honey, case or carload. Also amber. David Running, Filion, Mich.

FOR SALE—White clover honey in 60-lb. cans. None finer. Satisfaction guaranteed. J. F. Moore, Tiffin, Ohio.

FINE clover honey, extracted, pound or ton. Write amount wanted and get prices. L. G. Gartner, Rowan, Iowa.

OHIO'S finest comb and extracted white clover honey. Prices on request. Sample, 15c. Geo. Morrison, Cloverdale, Ohio.

HOWDY'S HONEY—Best quality clover extracted at reduced price. Howard Potter, Jr., Beekeeper, Ithaca, Michigan.

WHITE clover honey, put up two 60-lb. cans, 2 cans per case. State quantity wanted and I will quote price. Leonard S. Griggs, 711 Avon St., Flint, Mich.

STOLLER'S excellent quality clover honey, comb and extracted, unexcelled. Sample, 10c. The Stoller Apiaries, Latty, Ohio.

FOR SALE—Clover and light amber honey. Leland Farnsworth, Davison, Mich.

FOR SALE—White clover comb, and extracted in sixties. C. Holm, Genoa, Ill.

400 CASES white clover comb honey, new crop. Charles Guhl, Napoleon, Ohio, Route 7.

WINKLER'S white clover honey, 8c lb. Very light amber, 7c lb. Winkler Honey Co., Joliet, Ill.

COMB HONEY—White sweet clover, $3.50 case, 24 sections. Marsalek Apiaries, Cornlea, Nebr.

HONEY—Clover, basswood, amber and buckwheat extracted. F. W. Lesser, Fayetteville, N. Y.

WHITE clover and buckwheat comb and extracted honey for sale. H. E. Crowther, Jefferson, Ohio.

QUALITY clover comb and extracted honey. Any package or quantity. Albert H. Clagg, Bellefontaine, Ohio.

FOR SALE—5-lb. pails clover honey, 45c each; 12 or 36 pails to each box. Wm. G. Blake, Port Huron, Mich.

FOR SALE—Clover and buckwheat honey in new 60-lb. cans. D. R. Williams, 1110 South Main St., Elmira, N. Y.

FOR SALE—Amber clover honey in sixties, 6½c; one or more cases. Sample, 15c. W. J. Manley, Sandusky, Mich.

BUCKWHEAT comb No. 1, $2.50; No. 2, $2.00; extracted, 5c; No. 2, clover comb, $2.00. F. J. Smith, Castalia, Ohio.

LIGHT amber goldenrod honey at 6c per pound, five-pound pails, $6.00 dozen. The Vik Apiaries, Independence, Ohio.

WHITE clover honey, extracted and chunk; Prices on request. 1-lb. sample, 15c. F. W. Summerfield, Grand Rapids, Ohio.

HONEY FOR SALE—All grades, any quantity. H. & S. Honey & Wax Company, Inc., 265 Greenwich St., New York City.

CLOVER honey, choice, ripened on bees. Satisfaction guaranteed. Case or quantity. E. J. Stahlman, Grover Hill, Ohio.

CHOICE new clover, clover-basswood, buckwheat and amber extracted honey. Write for prices. Gelser Bros., Dalton, N. Y.

FOR SALE—Fancy clover honey, 60-lb. cans, by case, 7c; 5-lb. pails, 12 pails to case, $6.50. A. A. French & Son, Theresa, N. Y.

HARRIS QUALITY white clover extracted in new sixties. One case or a car. Depression prices. J. N. Harris, St. Louis, Mich.

FOR SALE—Fine quality white clover extracted; also light amber heartsease, in 60-lb. cans. Wilbur Green, La Grange, Ind.

FOR SALE—Three cars white and light amber in 60-lb., 10-lb. and 5-lb. tins. Write for prices. Dadant & Sons, Hamilton, Ill.

CLOVER, buckwheat and light amber extracted honey. Write for prices and sample. Archie Coggshall, R. R. 4, Ithaca, N. Y.

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FOR SALE—Section and bulk comb honey. Hyde Bros., New Canton, Ill.

HONEY by the carload or by the case; also beeswax. Walter Rink, Port Hope, Mich.

DELICIOUS sweet clover honey in 60s, two cans, $9.00. Joe C. Weaver, Cochrane, Ala.

CARLOAD or case white extracted sweet clover alfalfa. Geo. Seastream, Moorhead, Minn.

CHOICE clover and buckwheat honey in 5, 10 and 60-lb. tins. Harry T. Gable, Romulus, N. Y.

FOR SALE—Clover honey, 6c per lb.; amber, 5c f. o. b. All in new 60-lb. cans. Geo. M. Sowarby, Cato, N. Y.

BLUE vine honey, 300 cases No. 1 comb; 200 cases extracted. H. A. Ross, 217 E. Riverside, Evansville, Ind.

1930 crop clover-basswood honey, also 1931 crop amber fall honey, new 60-lb. cans. Write for prices. Sample, 10c. Meyer Toom, Route 4, Knoxville, Iowa.

FANCY white comb, $3.25; No. 1, $2.75; No. 2 white, amber or buckwheat, $2.25; wrapped, $25c extra. Clover extracted, 7c; amber, 6c; buckwheat, 6c. C. B. Howard, Geneva, N. Y.

NEW YORK State comb and extracted honey, buckwheat and clover, any quantity, all size packages. Five-pound pails my specialty. Edward T. Cary, 124 Williams St., Syracuse, N. Y.

NEW CROP SHALLOW FRAME COMB HONEY, also section honey, nice white stock, securely packed, available for shipment now. Colorado Honey Producers' Assn., Denver, Colo.

NEW YORK state clover honey, 8-case carriers, heavy fancy white, $3.50 per case; No. 1 white, $3.00 per case; white extracted, 7c; buckwheat extracted, 5c. Howard Grimble, Holcomb, N. Y.

COMB HONEY—Fancy white, No. 1 white, light amber and buckwheat at new attractive prices. Also white and buckwheat extracted in 60s and 5-lb. pails and any size bottles. Carlton D. Howard, Ovid, N. Y.

FOR SALE—Well ripened white sweet clover honey. Don't let your customers be without honey. The stock we furnish will please them. Write today for prices. Colorado Honey Producers' Association, Denver, Colo.

FOR SALE—No. 1 clover comb, $3.50 per case; No. 2, $2.50; buckwheat and fall comb, No. 1, $2.50; No. 2, $2.00 per case. On a 24-case shipment, 5% discount; 48 cases, 10% discount. For other prices, write. H. G. Quirin, Bellevue, Ohio.

FANCY COMB—$3.75 per case; No. 1, $3.25, No. 2, $2.50; No. 1 clover, water capped, No. 1 amber, No. 1 buckwheat; any of the three grades, $2.50; chunk comb, five-pound pails, $8.00 dozen. N. B. Querin & Son, Bellevue, Ohio.

HONEY—We sell the best comb in carriers of eight cases each—extracted basswood, buckwheat, sweet clover, white clover and light amber. Tell us what you can use for prices. A. I. Root Company of Chicago, 224-30 W. Huron St., Chicago, Ill.

CAR of honey, comb and extract, 2500 gallons maple syrup, straight or mixed in our various combinations to suit your palate. Prices drastically reduced and GRISWOLD PAYS THE FREIGHT 1000 miles. Are you sleeping or awake to the lowest and best money-making prices ever offered? No. 3A electric combination display cases, complete with glass, $8.00. Your Friend, The Griswold Honey Co., Madison, O., U. S. A.

COMB HONEY FOR SALE—Choice Wyoming comb honey, $2.70 per case. This honey put up in dust proof cases, but not wrapped in the silly cellophane blankets, or other money-wasting, time-killing devices. That the claim of sanitation for these money-wasting devices is all bunk, I can prove by your own testimony, and I have to ask you but one question, "Did you ever hear of any one being poisoned, made sick or contracting an incurable disease from eating comb honey not inclosed in one of these fake wrappers?" J. F. Weybright, Wheatland, Wyo.

HONEY AND WAX WANTED

BEEKEEPERS TAKE NOTE—All our honey-producing friends should take note of the following from the "Guarantee and Advertising Conditions" of Gleanings in Bee Culture: "We will not guarantee any honey buyer's financial responsibility and advise all beekeepers to sell for cash only or on C. O. D. terms except when the buyer has thoroughly established his credit with the sellers."

WANTED—Car lots of honey. State quantity, shipping point, and price. Mail sample. Hamilton, Wallace & Bryant, Los Angeles, Calif.

WANTED—A car or less quantity of white honey, in 60-lb. cans. Mail sample and quote lowest cash price for same. J. S. Bulkley, Birmingham, Mich.

HONEY WANTED—60-lb. cans, white clover extracted. Submit sample and price. No New York State honey wanted. Roscoe F. Wixson, Dundee, New York.

WANTED—Shipments of old comb and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

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AUTOMATIC swarm trapper; practical, efficient. Literature free. Vikla Manufacturing Co., Lonsdale, Minnesota.

FOR SALE—Barnes saw table, steel top. Root uncapping machine, excellent condition. Reasonable. Appeldoorn, Hamler, Ohio.

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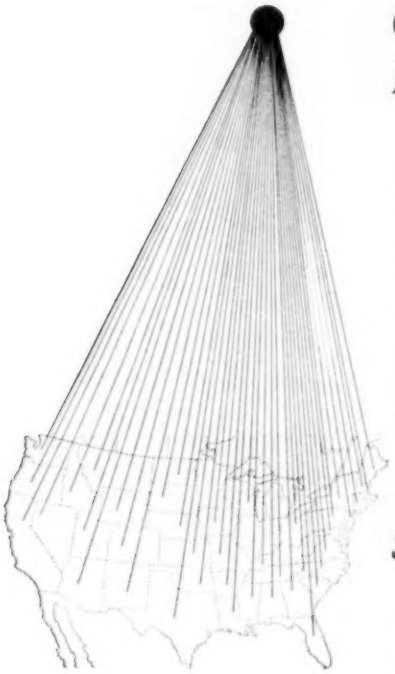

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Do not pass by this statement lightly. It is seriously given. American Honey Institute can not continue without the support of beekeepers, and that must be given without hesitation every year or the Institute can not carry on its great work. It is impossible to visit each beekeeper personally. If this could be done, the small amount of support requested would be given without hesitation.

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Send your honey to any of the list of receivers given on page 776, of this issue. If you send money, send it directly to

American Honey Institute, 225 Wimmer Bldg., Indianapolis, Ind.

(This space donated to the American Honey Institute by Gleanings in Bee Culture, Medina, Ohio.)

Index to Gleanings in Bee Culture

VOLUME LIX, 1931

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FOOD DEPARTMENT

(Continued from page 779.)

tablespoons vinegar, 1¾ cup boiling water, 1 cup red-skinned apples, 1 teaspoon salt, 1 cup red beet dices, ½ cup honey, 2 tablespoons sweet relish, 1 cupful finely shredded cabbage. Soak gelatine in cold water 5 minutes. Add lemon juice, vinegar, honey, salt and boiling water. Strain, and when mixture begins to stiffen, add remaining ingredients. Apples should be unpeeled and sliced or diced over middle size vegetable shredder. Either large or individual molds may be used. Be sure to dip molds into cold water before filling with gelatine mixture. Chill. When firm remove to lettuce leaves and garnish with honey salad dressing, strips of red pimentoes and green peppers. This salad carries out the holiday color scheme and is fine with roast turkey, duck or goose as well as baked ham.

Most of us have turkey, duck, goose or chicken for Christmas dinner but many like something different for the meat service for New Year's. Baked ham is fast becoming a favorite for holiday dinners. Because of its goodness, tenderness and fine flavor we recommend the latest suggestion of Swift & Company. Their Christmas suggestion is:

"Try baking Swift's Premium Ham the festive way. Rub the skinned surface with bread-crumbs, then baste it frequently with honey mixed with chopped marachino cherries. There is wonderful goodness in this combination."

What a Christmas this would be if every beekeeper would throw away his feeling of malice, resentment, hatred, or any petty grievance he might have against his fellow beekeepers and instead offer to pass on to others all this coming year everything that would be for the glorifying and good of the industry. We would then be manifesting our highest sense of goodness and not only making beekeeping just a little better profession for everybody engaged in it but also doing our part as beekeepers to carry out, "Peace on Earth, Good Will Toward Men."

TOLD BY THE JAY

(Continued from page 760.)

looked just as good as new and we were puzzled to find the trouble. I put my finger over the air hole and squeezed the bellows when I found there was no compression. I then learned that the bellows had become porous like a piece of cloth from the many thousands of stings that it had received. While working with the bees the bellows would become white with stings which eventually made it porous.

We took the bellows off, used it for a pattern and made a new one out of an inner tube of an auto as recommended in Gleanings a couple of years ago. It was interesting to see the bees trying to sting the rubber which would spring back and throw them off their balance. Once in a great while a bee would get its sting inserted into the rubber but I believe a lot of bees would climb on its back and help push. However, they never punctured the bellows which is still working perfectly, going on the third year.

But the farmer had had enough of bees in general and mine in particular and refused to have them on any land owned or controlled by him whatsoever. The entire yard was requeened and what a transformation. We had to enclose it with a wire fence to keep out the cattle as they rubbed on the hives and tipped them over. Had they tried this the year before, they would have tried but once.

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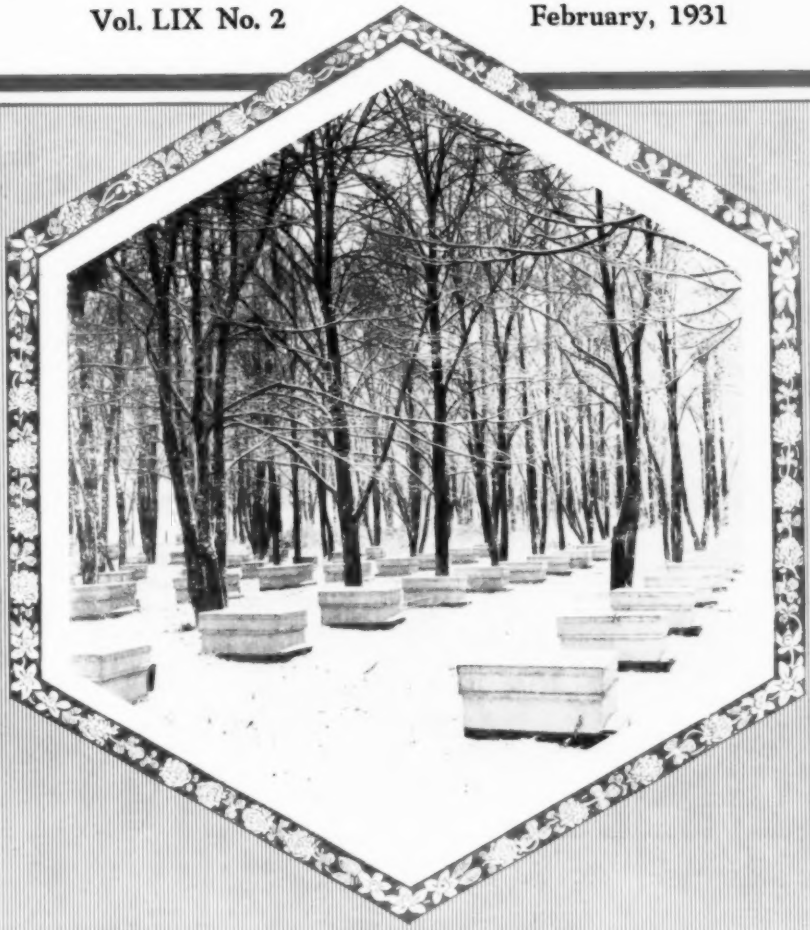
Vol. LIX No. 2 February, 1931



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NEW TIN RABBET

Here is the new strong metal rabbet supplied with all Lewis hives and hive bodies made for 1931 sale. It is just one of the new useful items shown in the 1931 Lewis-Dadant catalog.

Here is the new tin rabbet supplied with all Lewis hives and hive bodies made for 1931 sale. It is more rigid, easier to install and very difficult to bend when scraping out the inside of the hive.

You will see that the back of the rabbet fits into a tiny slot cut vertically into the wood where the end of the hive body is rabbeted out to make the top bar rest. This does away with the awkward and difficult nailing at the back of the metal.

The wood is cut away the thickness of the metal at the end of the body inside so the metal fits flush with the wood when the rabbet is nailed into place. In scraping the hive the hive tool will no longer catch in the metal nor will it bend up and interfere with frame manipulation. Once the back of the rabbet is fitted into the slot and held down flush with the wood the rabbet may be nailed into place through the **holes pierced in the metal** without danger of careless fitting.

If you do not receive a Lewis-Dadant catalog by the time you read this advertisement, write us for your free copy and information about the benefits of Atkins' beekeeping club.

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"The stormy March has come at last,
With winds and clouds and changing skies."

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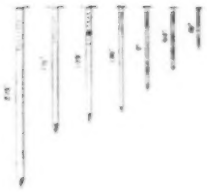
NEW LOW PRICES

LOWEST PRICES SINCE 1918 ON METAL-COVERED HIVES, RENOWN BEEWAY SECTIONS, FRAMES AND BEEWAY COMB HONEY SUPERS, ETC. GET A LEWIS 1931 CATALOG AND SAVE THIS YEAR BY USING BEEWARE.



All the guesswork is done away with in nailing up Beeware. In setting up all the many items of wooden goods Lewis makes there are just seven different sizes of nails. Some of these are special gauge or cement coated in order to give just the right nail for the job.

With each item is a simple direction sheet and the nails to use for each item are shown in actual size pictures. You can lay each nail right over the picture and so be sure of using the right one. The right nail for each item was carefully chosen after hours of experiment and using the nails Lewis intended means longer service for you from Beeware.

All direction sheets printed for packing 1931 Beeware are so simplified. This is just another refinement found only in Lewis Beeware. See or write your nearest Lewis dealer as there are over 500 east of the Rocky Mountains.

Patronize contributors to the American Honey Institute. They are helping you get a better price for honey.

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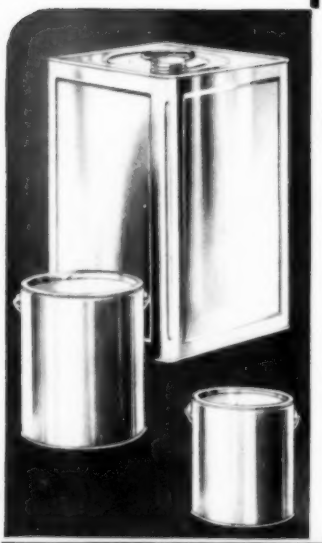
Gleanings in Bee Culture

Vol. LIX No. 7 July, 1931



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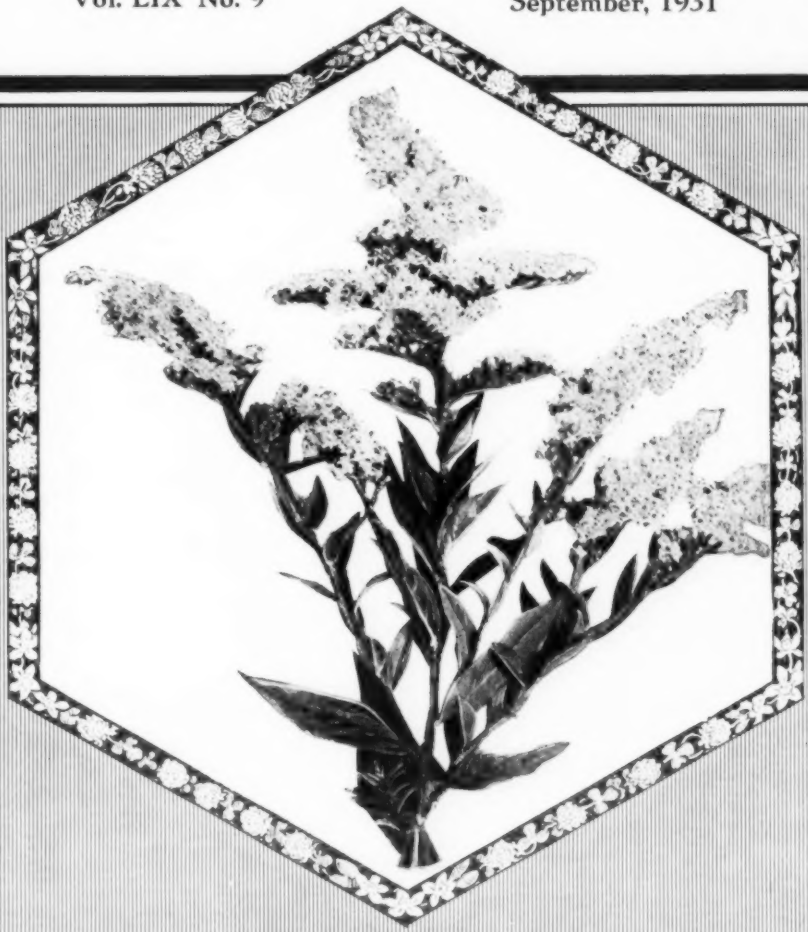

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N649—For 4 1/4" beeway and plain sections. 100, $1.00; 500, $4.40

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Postage extra, shipping weight—100, 1 lb.; 500, 4 lbs.

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N 66—Pails	50	5 -lb.	27 lbs.	3.00	3.10	3.25	3.45	3.20
N 65—Pails	12	5 lb.	13 lbs.	1.05	1.10	1.15	1.20	.95
N 69—Pails	50	10 -lb.	45 lbs.	4.50	4.60	4.80	5.20	4.60
N 68—Pails	6	10 -lb.	13 lbs.	.80	.85	.85	.91	.75
N624—Cans	1	5-gal.	10 lbs.	.60	.65	.65	.68	.60
N624—Cans	10 cs.	1 5-gal.		5.70	6.00	6.20	6.50	5.70
N625—Cans	2	5-gal.	15 lbs.	.95	1.10	1.05	1.20	1.00
N625—Cans	10 cs.	2-5-gal.		9.00	10.50	10.20	11.50	9.50
N648—Jars	24	3 1/2-oz.	7 lbs.	.60	.60	.60	.65	.60
N632—Jars	24	1/2 lb.	12 lbs.	.68	.68	.70	.75	.70
N631—Jars	24	1-lb.	22 lbs.	.90	.90	.90	1.00	.90
N630—Jars	12	2-lb.	17 lbs.	.65	.65	.65	.75	.65
N627—Jars	12	3 lb.	21 lbs.	.70	.75	...	...	.75
N633—Jars	12	EZ Qt.	21 lbs.	.90	.95	.90	1.20	.90

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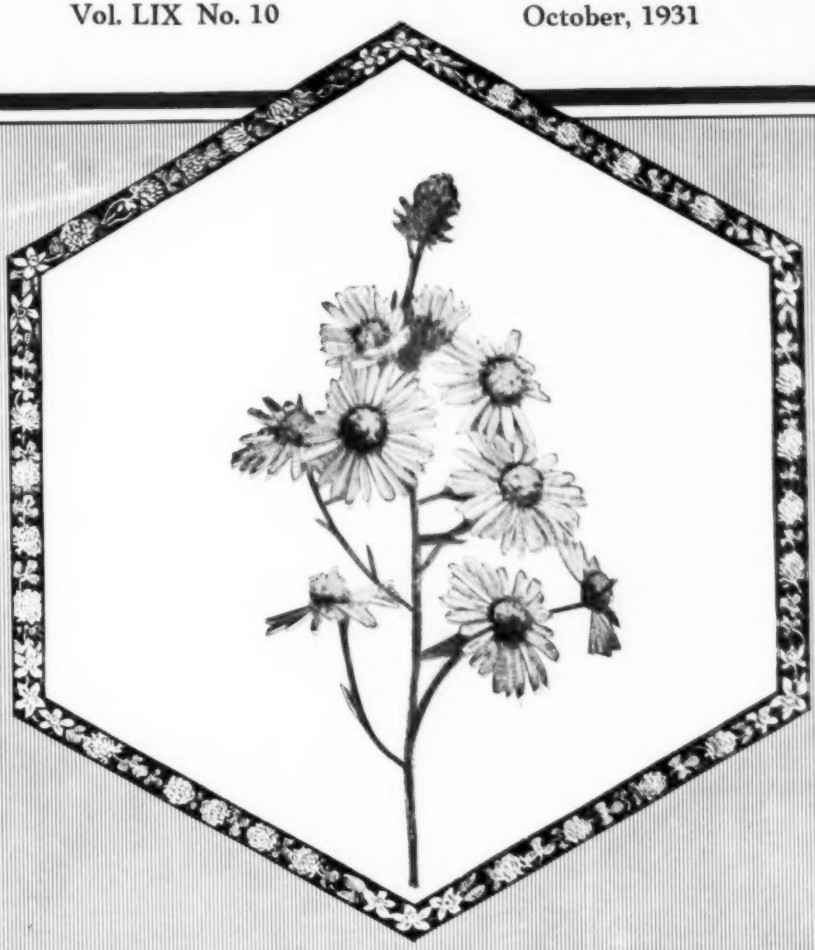

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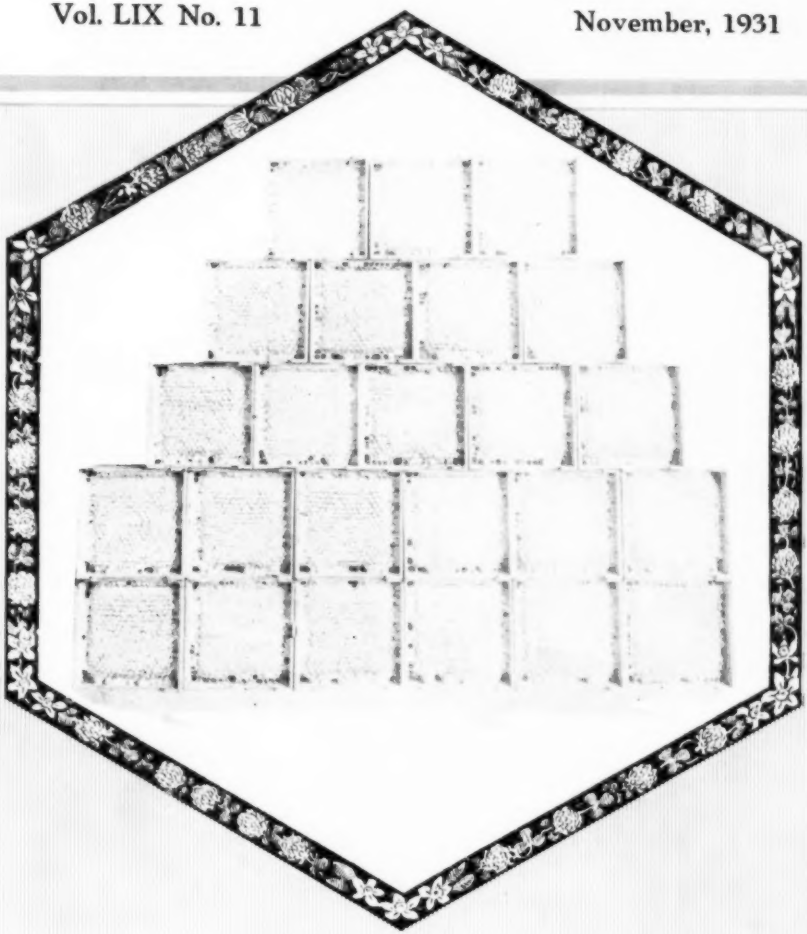

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December - 1931

Volume LIX Number 12

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